Financial Stability Report

May 2017

RESERVE BANK
OF NEW ZEALAND
TE PŪTEA MATUA

Reserve Bank of New Zealand
Financial Stability Report

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Access to the *Household Economic Survey* data used in Box A was provided by Statistics New Zealand under conditions designed to give effect to the security and confidentiality provisions of the Statistics Act 1975. The results presented in this study are the work of the author, not Statistics New Zealand.

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Contents

Chapter 1
Financial stability risk and policy assessment

New Zealand's financial system remains sound and is operating effectively. Banking system profitability has fallen modestly as a result of declining net interest margins, but remains robust. The banking system appears to be operating efficiently when compared to other OECD countries, based on metrics such as cost-to-income ratios, non-performing loans and the spread between loan and deposit rates. Banks have tightened credit conditions in response to slowing deposit growth and elevated credit risks in the property development and dairy sectors. Solvency margins have fallen in the insurance sector, but the sector remains well positioned to absorb the costs of the Kaikoura earthquake.

The outlook for the global economy has improved since the last *Report,* but global political and policy uncertainty remains elevated and debt burdens are high in a number of countries. A sharp reversal in risk sentiment could lead to higher funding costs for New Zealand banks and an increase in domestic borrowing costs. Rising protectionism could also affect the trade-exposed sectors of the New Zealand economy.

Against this backdrop, New Zealand's financial system remains exposed to three key risks: housing market vulnerabilities, bank funding pressures and dairy sector indebtedness. While these risks have reduced in the past six months, they remain elevated.

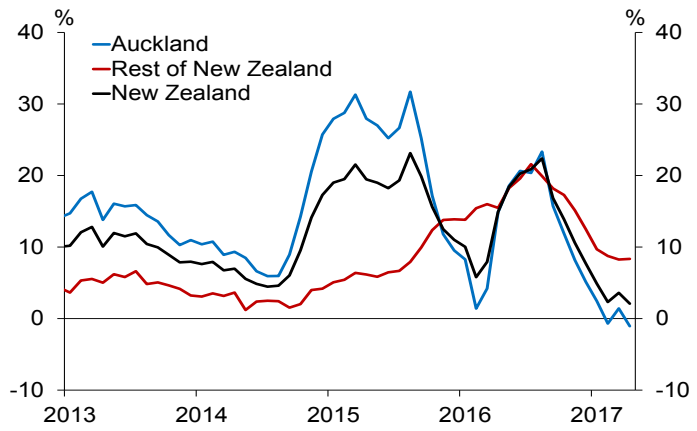
Risk assessment

Vulnerabilities in the housing market have stabilised.

House price growth has slowed in the past eight months (figure 1.1). This reflects several factors: the Reserve Bank imposed tighter loan-to-value ratio (LVR) requirements on lending to property investors in October 2016; banks have tightened serviceability criteria and increased mortgage interest rates; and affordability pressures are constraining prices in parts of the country. Household credit growth has fallen, but remains high at around 8 percent per annum. Household indebtedness continues to increase in relation to incomes.

The outlook for the housing market remains uncertain. While building activity has increased in recent years, the rate of house building remains insufficient to meet rapid population growth and address existing housing shortages. Mortgage interest rates also remain low, despite recent increases. A further resurgence in house prices would be of real concern, given existing affordability constraints.

Figure 1.1 House price growth *(six-month % change annualised, seasonally adjusted)*



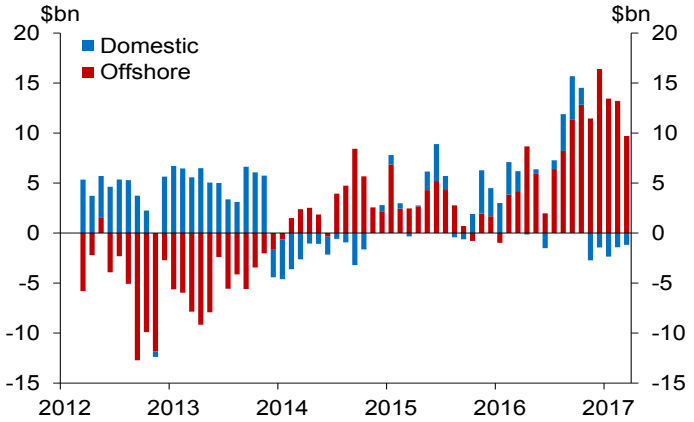
Source: Real Estate Institute of New Zealand.

The LVR policy has improved the resilience of the banking system to a correction in the housing market. However, a significant share of households has taken on loans at high debt-to-income (DTI) ratios and appear to be vulnerable to an increase in interest rates or a decline in income. An economic downturn could materially weaken the financial position of these households, which could exacerbate a fall in house prices if they are forced to sell their properties.

The banking system's exposure to offshore funding markets has increased.

New Zealand's banking system relies on funding from international wholesale markets due to low domestic savings in the economy. The reliance on offshore funding has fallen during the past decade, as higher domestic savings have allowed banks to obtain a greater share of funding from domestic deposits. However, this trend has reversed over the past year due to a decline in deposit growth. Banks have become more reliant on offshore funding to support credit growth (figure 1.2), leaving them more vulnerable to international risks that could increase the cost or reduce the availability of offshore funding.

Figure 1.2 Annual change in the stock of market funding



Source: RBNZ *Liquidity Survey*.

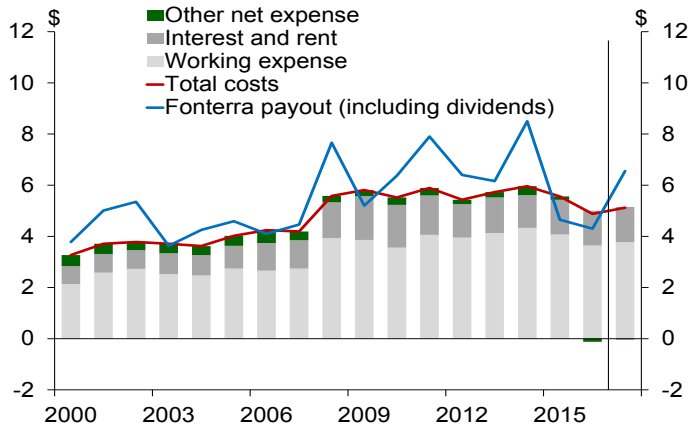
Banks have responded by increasing deposit rates in an effort to increase their deposit funding. Banks have also tightened lending standards on some forms of lending, most notably for residential property development, and increased some borrowing rates. This has helped to reduce the gap between deposit growth and credit growth over the past six months. The Reserve Bank supports a cautious approach to managing foreign debt in light of insights gained from the global financial crisis.

The outlook for the dairy sector has improved, but the sector remains vulnerable.

Following two years of low prices, NZD whole milk powder prices have increased by 45 percent over the past 12 months. The majority of dairy farms are now expected to be profitable in the current season

(figure 1.3). A timely recovery in dairy prices, along with financial support for troubled farmers, has kept loan defaults in the sector low.

Figure 1.3 Average dairy farm income and costs *(per kgMS)*



Source: DairyNZ, Fonterra, RBNZ estimates.

Note: 2016-17 season numbers are forecasts.

Nevertheless, parts of the dairy sector are over-indebted. Debt levels have been stretched by borrowing that farms took on to cover losses over the past few years. Around a quarter of bank loan exposures to the sector are being closely monitored by banks. This includes loans that are most vulnerable to a fall in income or an increase in costs. If farms become stressed, it should be quickly recognised in banks' risk models and banks should adequately provision against potential losses.

Policy assessment

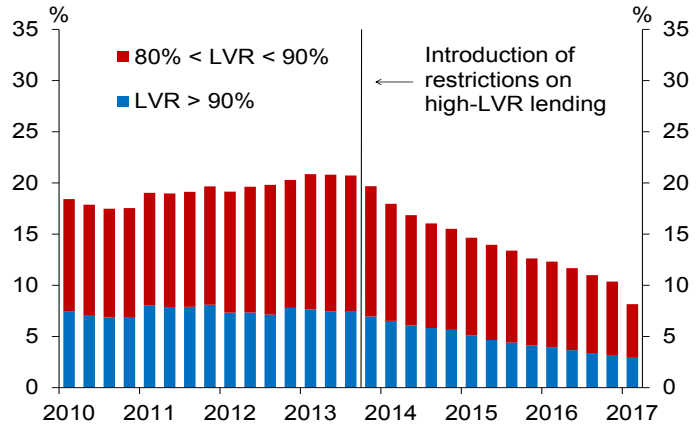
Banks should maintain capital buffers.

In light of the risks highlighted in this *Report*, banks need to maintain strong buffers of capital. The Reserve Bank is currently undertaking a review of bank capital requirements, and recently released an issues paper detailing the intended approach and scope of the review. Principles underpinning the review include that capital requirements for New Zealand banks should remain conservative relative to international peers and that complexity in capital regulation should be reduced where possible.

LVR policies are boosting bank resilience...

LVR policies have been in place since late-2013 to address financial stability risks arising from rapid growth in house prices and strong housing credit growth. LVR restrictions were tightened in October 2016, in response to renewed housing market pressure and increased activity by property investors. The policy has improved the resilience of the banking system by reducing the share of risky loans on bank balance sheets (figure 1.4). In addition, the policy appears to have contributed to a significant slowing in the housing market in the last six months, particularly in Auckland.

Figure 1.4 High-LVR share of banks' residential mortgage portfolios



Source: Registered banks' *Disclosure Statements*, RBNZ *Lending Position Survey*.

...but high-DTI lending is posing a risk.

Although LVR policies have helped to insulate the banking system from a housing downturn, low mortgage interest rates have encouraged an increase in high-DTI lending. Borrowers with high DTI ratios are typically more exposed to a rise in interest rates or a decline in income.

The Reserve Bank will shortly release a consultation paper proposing that DTI ratio restrictions be added to the Reserve Bank's macro-prudential toolkit. Restrictions on lending at high DTI ratios can be used to improve the resilience of the banking system by reducing the extent of mortgage defaults in a downturn, which could otherwise severely worsen housing market outcomes. DTI policies have been used to address housing market vulnerabilities in a number of countries, including in the UK, Ireland and Norway. Adding DTI restrictions to the macro-prudential toolkit was also one of the recommendations of the International Monetary Fund's (IMF's) recent assessment of New Zealand's regulatory framework.

If a DTI tool was available, the Reserve Bank would not apply it at this stage, given that LVR restrictions appear to be mitigating housing risks. However, demand drivers in the housing market remain strong, and a resurgence in house prices remains possible. Should high house price growth return and the proportion of housing lending at high DTI ratios remains high, a DTI restriction could be warranted.

Developments in financial sector regulation

The Reserve Bank's review of bank capital adequacy and consultation on a DTI macro-prudential instrument have been mentioned. Progress has also been made on a number of other initiatives: the Reserve Bank recently concluded its review of the outsourcing policy for banks; the Reserve Bank and other agencies are currently assessing the recommendations from the IMF's review of New Zealand's financial system; the bank director attestation regime is under review; and an oversight framework for financial market infrastructures has been approved by Cabinet.

Graeme Wheeler

Governor

Chapter 2
Macro-financial conditions

The outlook for the global economy has strengthened since the last *Report*, reducing risks to the international financial system. Sentiment in financial markets has improved, equity markets have rallied in advanced and emerging market economies, and credit spreads are low. However, some financial stability risks remain elevated, and some new risks have emerged. Global political and policy uncertainty is high, and debt burdens and asset prices have increased from already elevated levels in a number of economies. As a result, the global financial system remains vulnerable to a sharp re-pricing of risk or a deterioration in economic conditions.

Conditions in the New Zealand economy remain positive and supportive of financial stability. There are signs that credit and asset price growth in some sectors have begun to moderate from recent highs, although private sector indebtedness, particularly in the household and agriculture sectors, has continued to increase. Despite growth in debt, New Zealand's current account deficit narrowed and net external liabilities declined relative to GDP in 2016.

International conditions

Global economic growth is gaining momentum…

The outlook for global economic growth has improved over the past six months. The International Monetary Fund (IMF) expects global growth to rise from 3.1 percent in 2016 to around 3.5 percent in 2017 and 2018. The improved outlook partly reflects stronger activity in advanced economies. Growth in emerging market economies is also expected to remain solid, supported by continued strong growth in China and India, and a gradual recovery in some large commodity exporters, including Brazil and Russia.

A sustained period of very accommodative monetary policy has supported the long-awaited recovery in global economic activity. The US is the only major advanced economy that has started to raise its policy interest rate, with the target range of the federal funds rate increased by 25 basis points in both December and March to 75 -100 basis points. Further removal of monetary policy stimulus in the US is expected this year by market participants and members of the Federal Open Market Committee. A partial recovery in commodity prices has contributed to

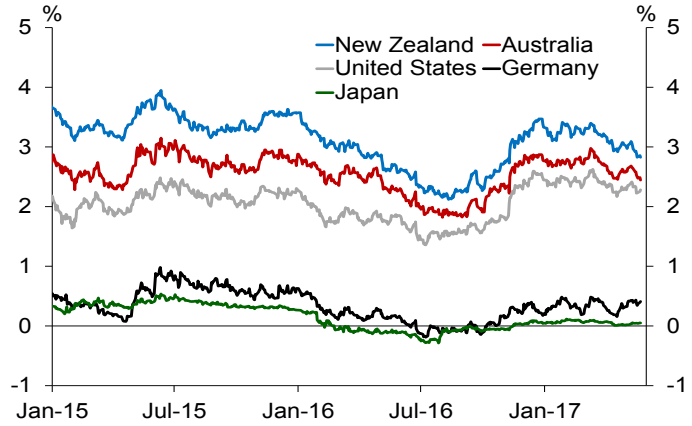
an increase in global headline inflation, although a number of advanced economies are still operating with spare capacity and core inflation measures remain subdued. As a result, other advanced economy central banks are expected to keep monetary policy highly accommodative for some time.

...improving sentiment in financial markets.

Reflecting the more positive global economic outlook, risk appetite in financial markets has increased and market-based measures of volatility have been low. US long-term sovereign bond yields increased sharply in late 2016 alongside expectations of fiscal stimulus and monetary policy tightening. Yields have drifted a little lower since March, partly due to geopolitical tensions and uncertainty about the ability of the US Government to achieve reforms designed to improve growth (figure 2.1). However, they remain well above their mid-2016 lows. Long-term sovereign bond yields in other advanced economies, including in New Zealand, have generally followed movements in the US. French sovereign spreads to German bunds widened in the first few months of 2017, alongside heightened political uncertainty, but subsequently declined following the French election.

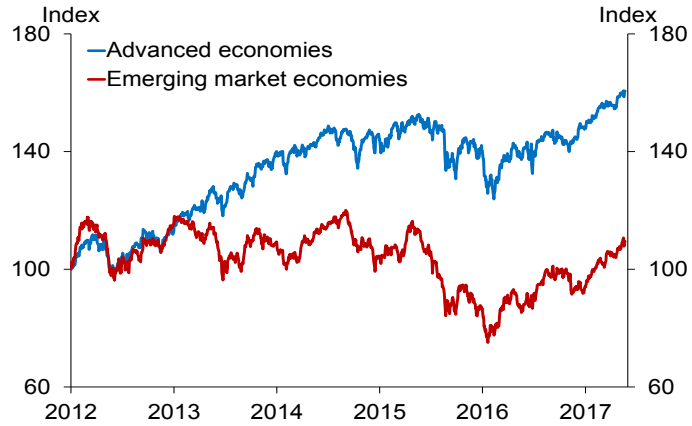
There have been sizeable gains in global equity markets since November (figure 2.2). The US S&P 500 index has reached a record high in recent months, in part due to expectations that US corporate tax cuts will provide a boost to earnings. The S&P 500 index has increased by around 30 percent since early 2016, with valuations appearing stretched on some metrics. Equity markets and currencies in many emerging market economies have also recovered from their sharp declines following the US election. Consistent with an improvement in risk appetite, credit spreads have declined further over the past six months and are at low levels.

Figure 2.1
10-year government bond yields



Source: Bloomberg.

Figure 2.2
Global share prices
(January 2012 = 100)



Source: Bloomberg.

Note: Share prices in 'advanced economies' is represented by the MSCI World Index and in 'emerging market economies' by the MSCI Emerging Markets Index.

Risks to global financial stability remain elevated…

The world economy is in a more robust position than a few years ago and banking systems are generally more resilient. But risks to growth are tilted to the downside and the global financial system remains vulnerable to a sharp re-pricing of risk or deterioration in economic conditions.

Global political and policy uncertainty increased sharply in 2016 and has remained high. This has reflected heightened geopolitical tensions and uncertainty about US fiscal and trade policy, UK/EU Brexit negotiations, and European elections. While fiscal stimulus in the US could boost global economic growth, it could also result in faster than expected normalisation of US monetary policy, a stronger US dollar, and tighter global financial conditions. In addition, global risk premiums could rise if protectionist trade policies are implemented by the US.

In Europe, bank equity prices have increased strongly since mid-2016, with earnings expected to be supported by a strengthening economic outlook and a steepening in yield curves. Banks' capital ratios and asset quality continue to improve, although there is still large variation between countries. Notably, the stock of Italian banks' non-performing loans remains high and accounts for around 30 percent of European banks' total non-performing loans. Despite improvement in European banks' earnings expectations, price-to-book ratios remain low, reflecting significant structural issues in the banking sector.

The low interest rate environment has facilitated an increase in household debt in a number of advanced economies, including in New Zealand. This has contributed to strong growth in asset prices, including residential property prices. Authorities in some countries have used macro-prudential policies to address the financial stability risks associated with rapid property price growth and high household indebtedness. For example, the Australian Prudential Regulation Authority recently announced further measures to reinforce sound residential mortgage lending practices, including limiting the flow of interest-only lending to 30 percent of total new residential mortgage lending, and ensuring banks place strict internal limits on interest-only lending at high loan-to-value ratios (LVRs).

…and Australian banks have been downgraded recently.

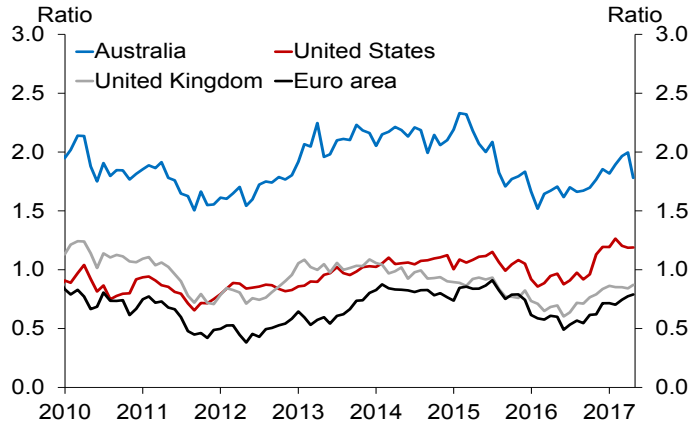
Elevated risk in the Australian housing market was a factor underpinning Standard & Poor's (S&P) recent downgrade of the stand-alone credit ratings of most Australian financial institutions. However, the issuer credit ratings of the four major banks is unchanged, due to S&P's expectation that these banks would receive Australian government support, if needed. The outlook for the Australian banking system is important for New Zealand, given the largest New Zealand banks are Australian owned and their credit ratings are closely linked to their parents' ratings.

In its 2017-18 budget, tabled in early May, the Australian Government announced a package of reforms intended to strengthen accountability and competition in the Australian financial system. It includes a levy on Australia's largest banks, which is due to be introduced on 1 July 2017, and is expected to be applied to all liabilities excluding additional Tier 1 capital and deposits that are protected by the Australian Government's Financial Claims Scheme. The liabilities of their New Zealand subsidiaries are not expected to be subject to the levy, but the liabilities of their New Zealand branches will be included.

This announcement, and broader headwinds to revenue growth, has contributed to around a 10 percent decline in the share prices of the four major Australian banks since the beginning of May. Nonetheless, the Australian major banks' share prices are still higher than 12 months ago,

and equity price-to-book ratios remain well above their peers in the US, UK and euro area (figure 2.3).

Figure 2.3 International banks' equity price-to-book ratios



Sources: Bloomberg, RBNZ calculations.

Note: The Australian ratio is a simple average of the four major Australian banks. The US ratio is adjusted for a series break in March 2014.

Financial stability risks are high in China...

In China, debt has continued to increase rapidly. Private non-financial credit as a percent of GDP rose to 210 percent in September 2016, and total social financing (a broader measure of debt in the economy) increased by 12.8 percent in the year to April. While economic growth in China has been robust, the economy's increasing reliance on debt leaves the financial system vulnerable to economic and financial shocks. In May, Moody's downgraded China's long-term local and foreign currency issuer credit ratings by one notch, reflecting its expectation that economy-wide leverage will increase further in the coming years.

In response to financial stability risks, Chinese authorities have been tightening their regulatory stance in an attempt to reduce leverage in the financial system and address risks in the shadow banking sector. So far this year, the People's Bank of China has increased interest rates slightly on a number of its lending facilities and announced that it will include off-balance sheet wealth management products within its macro-prudential assessment framework. Chinese authorities are taking a coordinated approach to containing risk in the financial system, but face a challenge in reducing leverage and meeting their economic growth target.

Capital outflows could also add to financial vulnerabilities in China, but recently China's external position has stabilised. China's foreign exchange reserves have increased slightly over recent months, pointing to reduced capital outflows alongside a tightening in existing capital controls and a stabilisation in the renminbi.

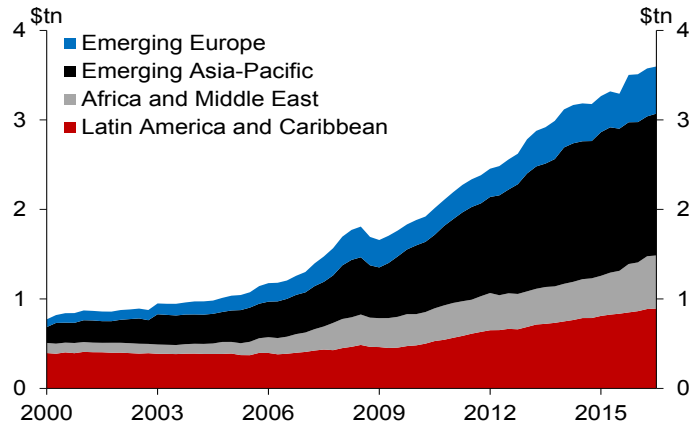
...and in some other emerging market economies.

The outlook for other emerging market economies has generally improved and there has been a steady inflow into emerging market bond and equity funds since the beginning of the year, following sharp outflows after the US election. Bank capital ratios have been increasing steadily and bank profitability is generally strong. Most emerging market economies have a lower ratio of private non-financial sector debt to GDP than China, but indebtedness has generally increased over recent years, particularly in some commodity-exporting economies.

Financial stability risks, however, remain elevated in emerging market economies. A more aggressive tightening in US monetary policy and a stronger US dollar could result in a sharp increase in debt-servicing costs for borrowers with unhedged US dollar debt. This could coincide with a general deterioration in risk appetite and capital outflows. Total US dollar-denominated credit to emerging market borrowers, excluding banks, has increased by 12 percent on average per annum over the past decade

(figure 2.4). However, a significant proportion of borrowers are likely to be partially hedged. The introduction of trade protectionist policies by the US Government could affect trade and economic growth in emerging market economies, particularly those with large direct or indirect trade links to the US.

Figure 2.4 US dollar-denominated credit to the non-bank sector in emerging market economies *(US dollar)*

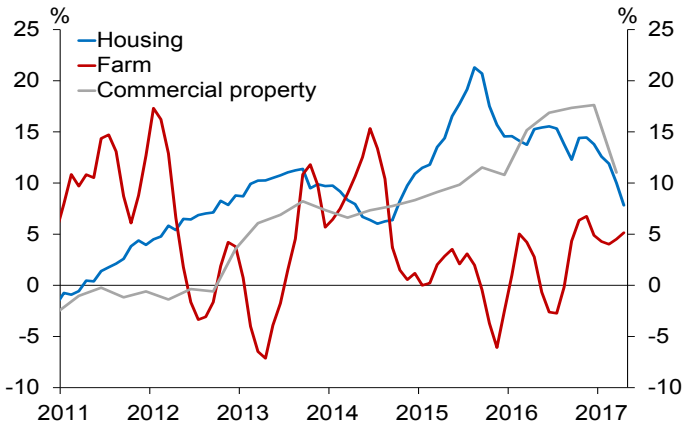


Source: Bank for International Settlements.

Note: The non-bank sector comprises non-bank financial entities, non-financial corporations, governments, households and international organisations.

over the past few years. More recently, house price inflation in New Zealand has moderated (figure 2.5). Over the past six months, Auckland house prices have declined slightly, while annual house price inflation in the rest of New Zealand has slowed to 8 percent. Commercial property price inflation has also slowed from a rapid pace in 2016, while farm prices have been supported by the improvement in global dairy prices.

Figure 2.5 Annual property price growth by sector



Source: Real Estate Institute of New Zealand, Jones Lang LaSalle.

Note: Farm price inflation is a three-month moving average.

Domestic conditions

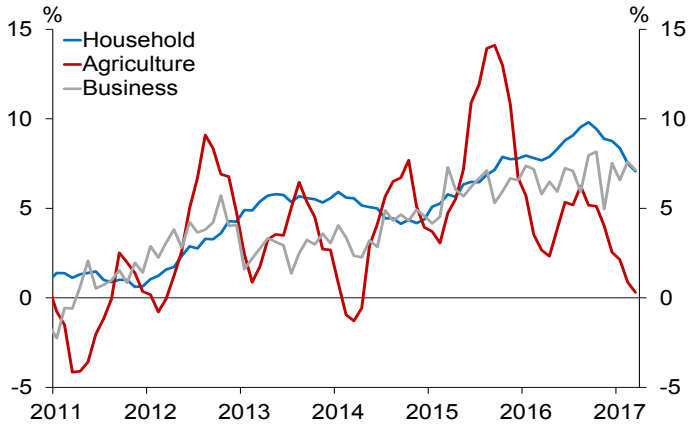
House price growth has moderated in recent months.

New Zealand's economic growth was weaker than expected in the December quarter, but the outlook remains positive. The outlook is supported by accommodative monetary policy, strong population growth, and high levels of household spending and construction activity. After a sustained period of low interest rates, asset price growth has been strong

Credit growth has also slowed...

In the six months to March, housing credit grew at an annualised pace of 7 percent, compared to 10 percent in the six months to September (figure 2.6). The slowdown is due to a combination of factors, including higher mortgage interest rates and a tightening of high-LVR lending restrictions. Consumer credit growth has picked up, increasing 5 percent in the year to March, but it remains just 4 percent of total credit.

Figure 2.6
Credit growth by sector
(six-month % change annualised)



Source: RBNZ *Bank Balance Sheet* (BBS).

Note: Business credit growth is an annual percent change.

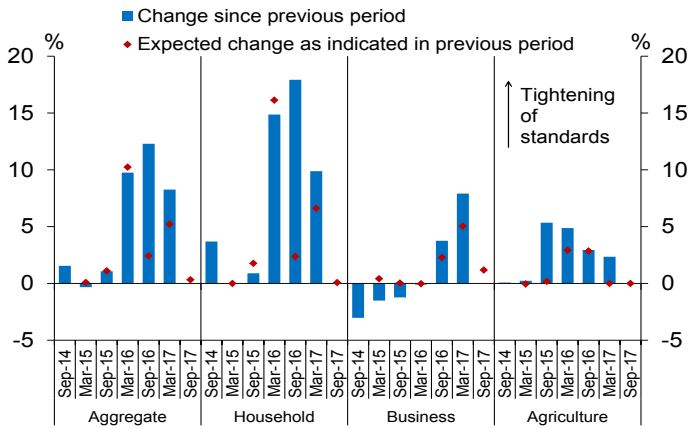
Business credit grew by 7 percent in the year to March, close to the average growth rate over the past couple of years. In contrast, the level of agriculture credit has been broadly flat over the past six months, in part due to a decline in dairy farms' working capital needs as dairy prices recovered.

In light of the current funding environment and heightened risks in some sectors, some banks have tightened lending standards over the past six months (figure 2.7). In particular, banks are being more selective about their lending for residential property developments as capacity constraints in the construction industry and rising costs have contributed to increased credit risk in the sector.

...but indebtedness has continued to rise.

Household debt-to-disposable income rose to 167 percent in March, and debt has also increased as a proportion of income in the agriculture sector (figure 2.8). While low interest rates have eased debt serviceability burdens, higher indebtedness has made borrowers more vulnerable to a sharp rise in interest rates or a fall in incomes.

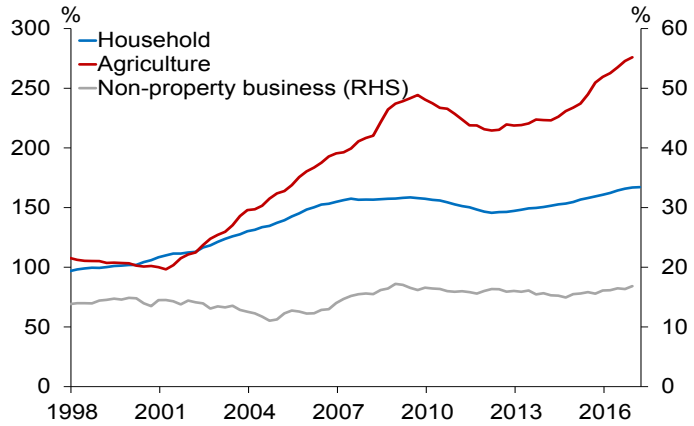
Figure 2.7
Non-price lending standards by sector
(net % of banks)



Source: RBNZ *Credit Conditions Survey.*

Note: Non-price lending standards include maximum allowable LVR, maximum loan maturity, minimum interest coverage ratio and loan covenants. Net percent of banks is the percentage of banks reporting a tightening in non-price lending standards minus the percentage reporting an easing.

Figure 2.8
Debt-to-income ratios by sector



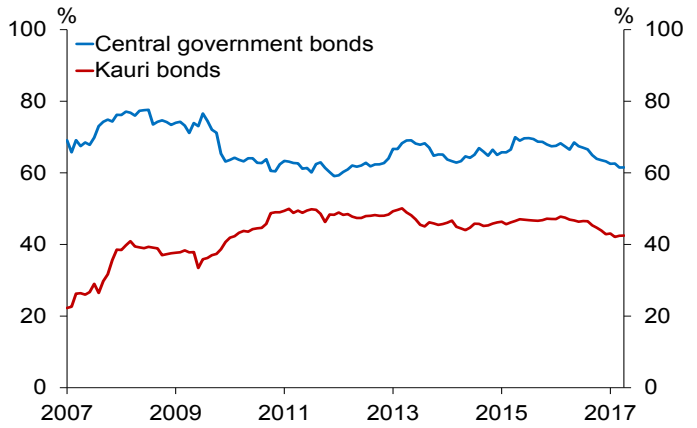
Source: Statistics New Zealand, RBNZ BBS, RBNZ *Standard Statistical Return*, RBNZ calculations.

Note: For the agriculture and non-property business sectors, debt is derived from sectoral credit measures and income is estimated using various data series, including national accounts. For the household sector, debt and disposable income are taken from the RBNZ's published household statistics.

The non-resident share of domestic debt holdings has declined…

The value of New Zealand central government debt securities on issue has been broadly stable over the past six months. The value of Kauri bonds on issue, which are NZD-denominated bonds issued in New Zealand by non-residents, continues to rise, albeit at a slower pace than in recent years. However, the share of New Zealand government debt and Kauri bonds held by non-residents has declined over recent months (figure 2.9). This could partly reflect a reduction in foreign investor demand for NZD-denominated assets as interest rate differentials have narrowed between New Zealand and other advanced economies.

Figure 2.9 Proportion of bonds held by non-residents

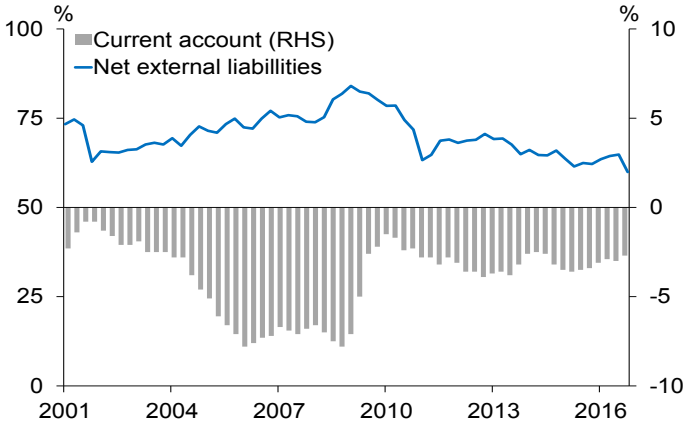


Source: RBNZ *Debt Securities Database*.

…as have New Zealand's net external liabilities.

New Zealand's annual current account deficit narrowed in the December quarter, to 2.7 percent of GDP (figure 2.10). This was driven by a decline in the net income deficit and an increase in the services trade surplus. New Zealand's net external liabilities fell sharply in the December quarter, to 60 percent of GDP. However, a large part of this decline was due to valuation effects.[1] More broadly, New Zealand's net external liabilities relative to GDP have declined significantly since 2009. Consistent with the decline in net external liabilities and lower global interest rates, New Zealand's external debt servicing payments as a proportion of annual exports of goods and services (akin to an external 'debt service ratio' for New Zealand) has declined from around 20 percent in 2008 to 7 percent at the end of 2016.

Figure 2.10 Current account and net external liabilities
(% of nominal GDP)



Source: Statistics New Zealand.

1 Two-thirds of the decline in net foreign liabilities in the December quarter was due to valuation effects. Of note, the value of New Zealand's offshore liabilities declined by $3.8 billion due to changes in market prices (there was a decline in New Zealand equity and bond prices over the quarter).

Chapter 3

Risks to New Zealand's financial system

New Zealand's financial system is sound but is exposed to three key risks: housing market vulnerabilities, bank funding pressures and dairy sector indebtedness. On balance, these risks have moderated since the last *Report*.

House price growth has declined in the past six months, reflecting higher mortgage rates, tighter lending conditions, the impact of the recent LVR policy change and affordability constraints in Auckland. However, house prices are elevated in some regions and underlying drivers of price growth remain strong. Banks have improved the quality of their mortgage lending, but many homeowners appear vulnerable to an increase in interest rates or a fall in income.

Banks have become more reliant on offshore funding to support new lending, exposing them to international risks that could disrupt global markets. Encouragingly, the gap between deposit and credit growth has narrowed in the past six months, as banks have moved to address their funding challenges.

Conditions in the dairy sector have improved since the last *Report*, as global dairy prices increased in late 2016. But indebtedness in the sector has continued to increase, and the most indebted dairy farms remain highly vulnerable to lower dairy prices or an increase in costs.

Key risks to New Zealand's financial system

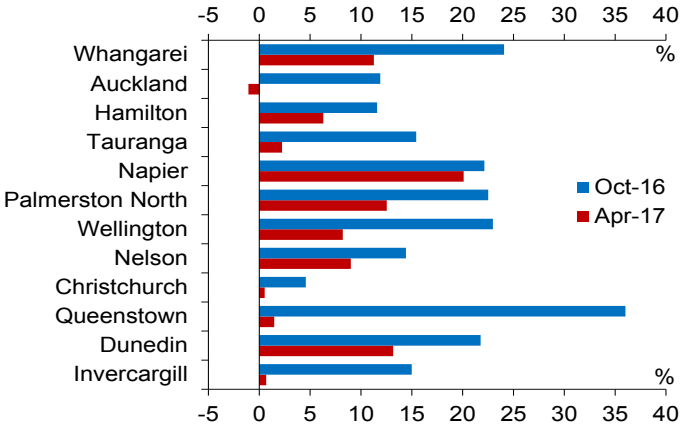
Housing market vulnerabilities

Housing market conditions can have an important bearing on the soundness of New Zealand's financial system, as houses and mortgages are the predominant assets on household and bank balance sheets. In recent years, some regions of New Zealand have experienced unsustainable house price growth, which increases the risk of a sharp correction in prices. The Reserve Bank has taken steps to reduce the impact a housing correction would have on the banking sector. Since the last *Report*, house price inflation has moderated and banks are more resilient to a housing market downturn. But house prices are still high and some homeowners are vulnerable to a potential fall in incomes or a rise in mortgage rates.

House price inflation has slowed…

Annual national house price inflation, as measured by the Real Estate Institute of New Zealand's (REINZ) new house price index, has fallen from around 14 percent in October to 8 percent in April. The market has been particularly subdued in the past six months: nationwide house prices have grown at an annualised rate of 2 percent and Auckland house prices have fallen slightly (figure 3.1). Although price growth has slowed, it remains elevated in some parts of the country.

Figure 3.1
House price growth
(six-month % change annualised, seasonally adjusted)

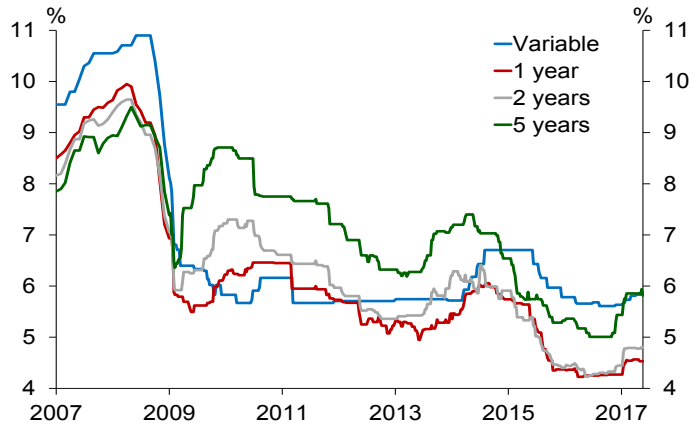


Source: REINZ.

Note: The chart uses REINZ's new house price index, developed in partnership with the Reserve Bank. The new index uses the sale price to appraisal ratio (SPAR) methodology which provides a more accurate measure of house prices than REINZ's previous house price index.

A range of factors have contributed to the slowdown in the housing market. In October 2016, the Reserve Bank tightened restrictions on high loan-to-value ratio (LVR) lending. The policy, primarily designed to strengthen bank balance sheets, has reduced investor activity in the market and is estimated to have reduced house price growth. Separately, banks have tightened their lending conditions, including raising mortgage rates from historically low levels, which has likely moderated housing demand (figure 3.2).

Figure 3.2
Mortgage rates by term

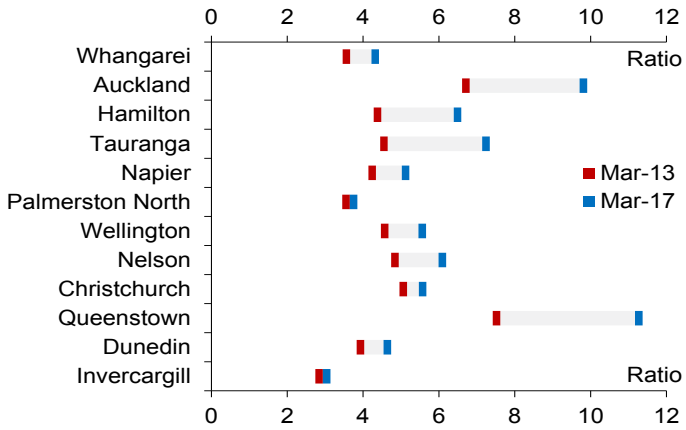


Source: Interest.co.nz, RBNZ *Standard Statistical Return* (SSR).

…but house prices remain overvalued on key metrics…

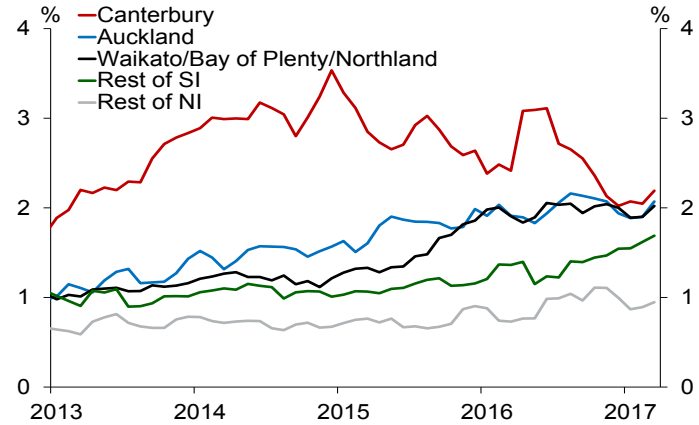
House prices, however, remain overvalued in many parts of the country on key metrics, and there remains the risk of a sharp correction. Prices are particularly stretched in Auckland and some surrounding cities, where price-to-income ratios have increased substantially (figure 3.3). Prices have also become more stretched relative to rents in the past year: although, nationwide, average rents grew at 4 percent in the year to April, house prices grew at twice that rate. Rental yields are near record lows.

Figure 3.3
Median house price-to-income ratios



Source: Interest.co.nz

Figure 3.4
Consent issuance
(Annualised ratio of quarterly consent issuance to regional dwelling stock)



Source: Statistics New Zealand.

Note: Consent issuance is seasonally adjusted. Dwelling stock is the number of residential dwellings as per the 2013 Census.

...and supply remains slow to respond to high prices.

High house price and rental price growth reflects strong demand for housing relative to supply. This is, in part, driven by high levels of migration. Over 60,000 more people of working age moved to New Zealand than left in the year to April. Supply has been slow to respond to population growth, particularly in Auckland where about half of new migrants have settled. Building activity has picked up over the past two years, but the level of consent issuance in Auckland is still likely to be insufficient to accommodate population growth and address existing housing shortages (figure 3.4).

The level of building activity may reflect a number of factors, including higher construction costs, capacity pressures in the construction industry and uncertainty around aspects of Auckland's Unitary Plan, which is only partly implemented. It may also reflect the tightening of credit availability for residential property developers. Major banks have become more selective in lending to developers and have tightened lending standards in response to slowing deposit growth and a perceived increase in risks in the sector.

In the long term, an increase in housing supply is needed to address the underlying imbalance between demand and supply in many regions. It is uncertain whether the current constraints on building activity will persist. It is possible that building activity in regions with the greatest demand and supply imbalances could pick up in the near term. The final form of the Auckland Unitary Plan is becoming clearer and several key appeals have been resolved in recent months. Also, construction sector

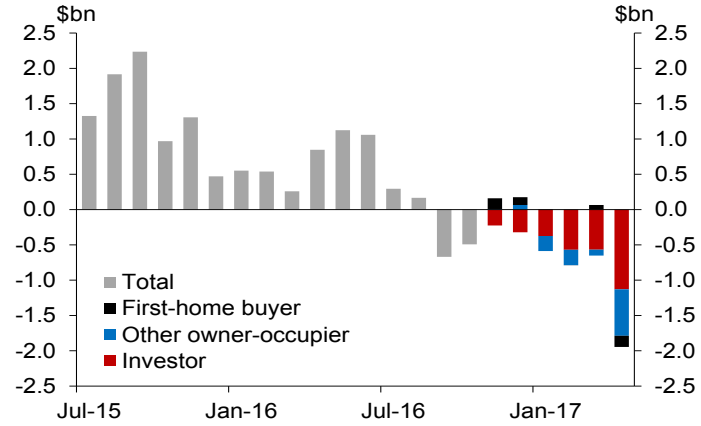
resource constraints could ease as residential rebuild activity declines in Christchurch.

Credit growth has recently slowed…

Household credit grew by around 8 percent in the year to March. However, new mortgage lending has fallen in recent months: in the three months to April, banks wrote $3.3 billion less in mortgages than in the same period a year before (figure 3.5). Lending against investment property fell particularly sharply, with investor lending now comprising around 35 percent of new mortgage lending, compared to 42 percent in April 2016.[1]

Banks have disproportionately reduced lending to riskier borrower classes, partly in response to the Reserve Bank's tightening of LVR restrictions in October 2016. In the year to April 2017, the share of total new mortgage lending to investors with LVRs above 60 percent has halved. The share of new mortgage lending to owner-occupiers with high LVRs has also remained low. These developments have helped to further reduce the stock of high-LVR lending on banks' balance sheets, increasing banks' resilience to housing market risks.

Figure 3.5 Annual change in monthly new mortgage commitments



Source: RBNZ *New Residential Mortgage Commitments Survey.*

Note: Disaggregated data are not available prior to November 2016. The annual changes for March and April reflect the timing of Easter weekend.

…but household debt has risen and become more concentrated…

Despite the recent slowdown in house price growth and new mortgage lending, many households remain heavily indebted. The household debt-to-disposable income ratio has increased to 167 percent, above its peak of 159 percent in 2009. Low interest rates have kept this debt level manageable, but many households are vulnerable to an increase in interest rates.

Auckland households are particularly vulnerable, as they are more indebted relative to incomes than households in the rest of New Zealand. The concentration of debt in Auckland is also particularly concerning given that Auckland house prices are at a heightened risk of a sharp correction, due to the particularly large price increases in recent years.

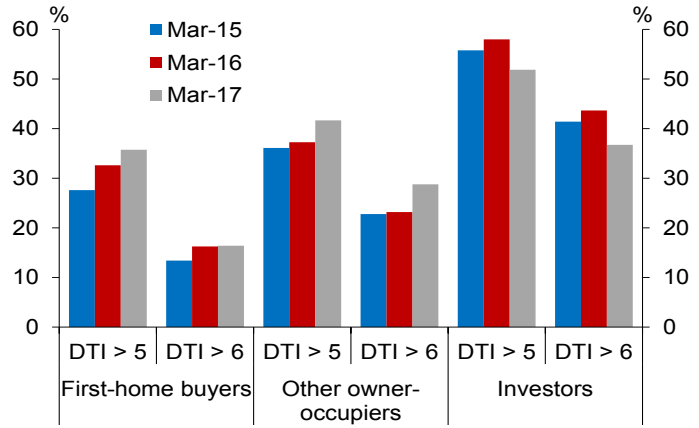
1 'Investor lending' is defined as a loan secured over any investment property, in accordance with the definition used in the Reserve Bank's investor LVR restrictions. Previous *Reports* have defined the investor share based on the purpose of the loan, which produces lower estimates.

...and more lending is at high DTI ratios.

An increase in the share of borrowers with high debt-to-income (DTI) ratios has contributed to the increase in aggregate household indebtedness. These borrowers are vulnerable to debt servicing shocks, such as higher interest rates or a fall in income. This makes them more likely to default on their mortgage or cut consumption sharply, and makes them more likely to sell their house to repay their mortgage, in response to mortgage affordability shocks. If a significant proportion of households have debt burdens that are unsustainable in the event of an affordability shock, financial stability could be threatened by direct losses on bank mortgage lending and by indirect losses on banks' other assets, caused by an economic downturn.

Banks have been reporting data on the DTI ratios of new lending since early 2014. Banks are in the process of improving the data quality. The preliminary data are likely to overstate the share of lending at high DTI ratios, due to data collection issues such as the incomplete capture of borrower incomes. Despite these data challenges, it appears that the share of new lending at high DTI ratios has remained elevated. Banks report that the share of new lending at DTI ratios above five has continued to grow over the past year for first-home buyers and other owner-occupiers, to 36 percent and 42 percent respectively in March (figure 3.6). For investors, the tighter restrictions on high-LVR investor lending have had a significant impact on high-DTI borrowers, reducing their share of investor lending from 58 percent to 52 percent.

Figure 3.6 Share of new lending with high DTI ratios *(% of new lending by borrower type)*



Source: Private reporting from the five largest banks.

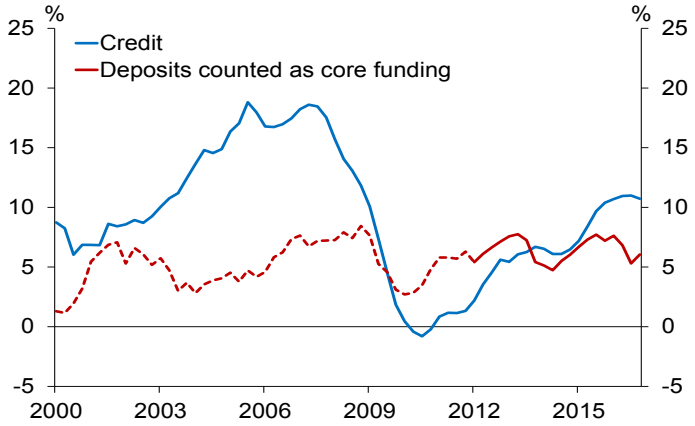
Preliminary Reserve Bank analysis on the impact of higher mortgage rates on recent borrowers suggests that many would struggle to service their mortgage if mortgage rates increased (see box A). Mortgage rates can rise quickly. For example, the average new floating mortgage rate in New Zealand rose from around 7 percent to over 10 percent between early 2004 and 2007. Fixed interest rates may give some borrowers time to adjust to higher interest rates. However, based on banks' current mortgage portfolios, about 40 percent of mortgages would re-price within six months and 60 percent within a year.

Bank funding pressures

Credit growth continues to outpace deposit growth.

Credit growth has continued to exceed deposit growth in the past six months (figure 3.7), increasing the banking system's reliance on market funding. This increases the volume of funds that banks must raise offshore, given New Zealand's relatively low domestic savings rate and small capital markets. If the gap between credit and deposit growth is sustained, banks are likely to become more dependent on offshore markets to sustain credit growth and to replace expiring funding. This would increase their vulnerability to international risks that could increase the cost or reduce the availability of funding. However, banks have recently begun to compete more aggressively for deposits and tighten lending standards, which should help alleviate funding pressures.

Figure 3.7 Annual increase in credit and deposit funding *(% of GDP)*



Source: Statistics New Zealand, RBNZ SSR, RBNZ *Liquidity Survey*.

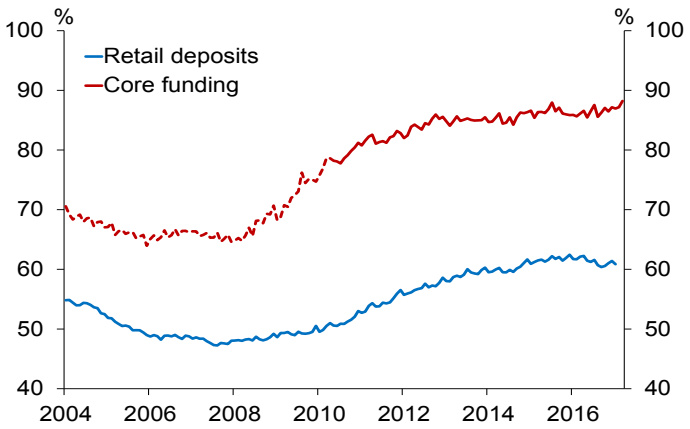
Note: Deposits counted as core funding includes haircuts made as part of the liquidity policy, which increase according to the size of the deposit. The dashed line shows growth in deposits measured by the SSR prior to the introduction of the RBNZ *Liquidity Survey*.

Funding profiles have improved since the GFC...

It is beneficial for banks to have diverse sources of funding to provide resilience against problems with one funding source. New Zealand's banking system relied heavily on offshore short-term funding prior to 2009, making it vulnerable to offshore market disruptions. This risk was identified before the GFC and was clearly demonstrated when New Zealand banks' offshore commercial paper issuance fell by one-third in NZD terms between September 2008 and March 2009.

The Reserve Bank introduced a new liquidity policy in 2010. The policy includes the core funding ratio (CFR) requirement which requires banks to finance at least 75 percent of their loan portfolio with stable funding, which is broadly classified as non-financial deposits, Tier 1 capital and long-term market funding. This has resulted in a rise in banks' use of stable funding (figure 3.8) and an increase in the average maturity of the banking system's market funding. This reduces the proportion of funding that banks would need to replace during a short-term stress event, improving the resilience of banks to funding market disruptions and reducing their need for emergency liquidity assistance.

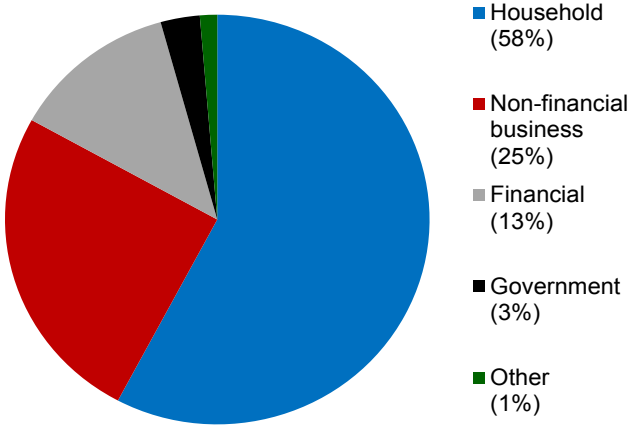
Figure 3.8 Core funding and retail deposit funding *(% of gross loans and advances)*



Source: RBNZ *Liquidity Survey*, RBNZ SSR.

Note: The dashed core funding line is estimated based on SSR data.

Figure 3.9 Sources of deposit funding *(as at 31 March 2017)*



Source: RBNZ *Bank Balance Sheet* (BBS).

Strong growth in deposits relative to credit was a key driver of the improvement in funding resilience in the years immediately after the GFC. This improved the soundness of New Zealand's banking system, as deposits are usually a stable funding source and banks with greater deposit funding have typically been more resilient during financial crises.

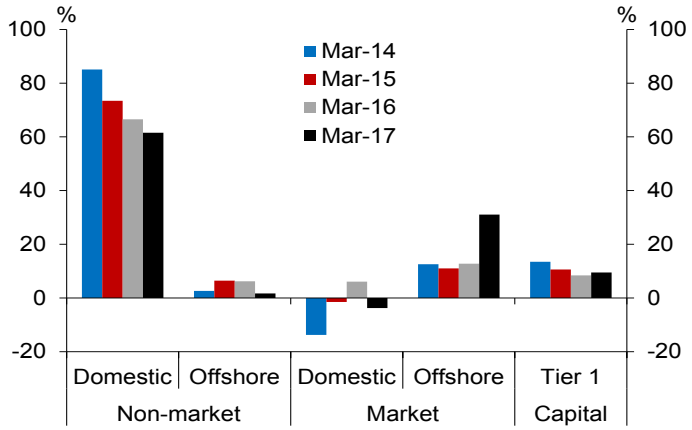
The stability of deposit funding can vary depending on the nature of the depositor and the value of the deposit. Household deposits are typically one of the most stable deposit types, as most households are less sensitive to market developments and have less money at risk than other depositors. Currently, around 65 percent of bank funding is in the form of deposits, and around 60 percent of deposits are sourced from the household sector (figure 3.9).

...but household deposit growth has declined over the past year.

Although bank funding positions have improved since the GFC, household deposit growth has weakened over the past year, particularly when compared to the growth in household credit. The recent drop in household deposit growth is likely due to a combination of factors. Insurance inflows from the Canterbury earthquakes are near complete. Increased confidence in the equity market is likely to have reduced deposit growth as households have shifted savings. Improved confidence has also encouraged household consumption growth to increase through 2016, which has contributed to a reduction in the household saving rate.

As the growth rate in household deposits slowed over the past year, banks have increasingly turned to wholesale markets to finance credit growth. In the year to March 2017, 31 percent of bank funding growth was raised in offshore markets, significantly more than in previous years (figure 3.10).

Figure 3.10 Growth in bank funding by source *(share of change in total funding)*



Source: RBNZ *Liquidity Survey*, RBNZ *Capital Adequacy Survey*.

Offshore funding exposes the financial system to international risks…

Offshore funding conditions have been benign recently and banks have maintained their CFRs by limiting their use of short-term offshore funding. Nevertheless, increased use of offshore funding exposes the banking system to international risks that could significantly increase the cost of funding or reduce its availability.

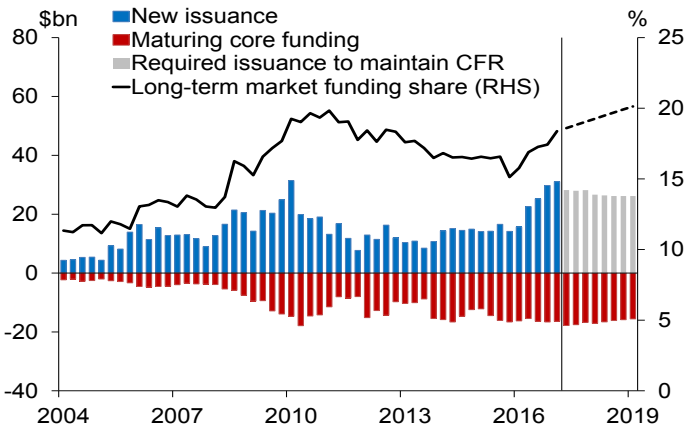
There are a number of global risks that could disrupt the functioning of international financial markets (see chapter 2). In addition, credit rating agencies highlight the risks associated with New Zealand banks' reliance on offshore funding markets. Greater reliance on offshore funding could reduce the credit ratings of domestic banks and, in turn, increase their funding costs.

…but banks are still exposed to disruptions in international funding markets.

Disruption to New Zealand banks' access to offshore funding could severely damage the banking system's ability to meet credit demand. A gradual decline in credit growth could benefit financial stability but a sharp credit contraction could be disruptive, especially for the housing market and dairy sector. A sharp contraction in credit availability could also weaken financial system efficiency by reducing the ability of creditworthy borrowers to obtain bank credit.

International risks could also inhibit the ability of banks to refinance existing debt that matures while their access to funding markets is disrupted. Independent of future credit growth, banks will have to replace an estimated $45 billion of core funding currently sourced from wholesale markets over the next three years (figure 3.11). Regulatory changes in Australia will also require Australian-owned banks in New Zealand to reduce their reliance on non-equity funding from their Australian parents. These banks are making good progress on the repayment of parent funding required by the regulatory changes, but some banks are likely to continue making repayments until 2020.

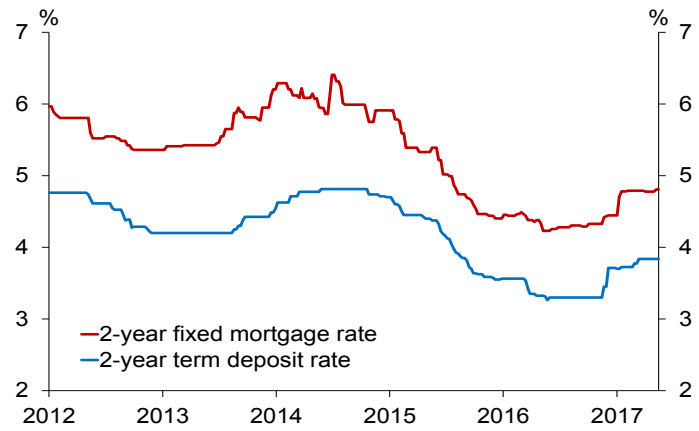
Figure 3.11 Annual issuance and expiry of market core funding *(12-month rolling total)*



Source: RBNZ *Liquidity Survey*, RBNZ SSR, Bloomberg.

Notes: See chart datapack for details on how the data are calculated. The chart does not show the issuance of short-term market funding, which made up a larger proportion of bank funding prior to the GFC.

Figure 3.12 Average bank two-year deposit and mortgage rates



Source: Interest.co.nz.

Note: Deposit rates are for a minimum deposit of $10,000.

Banks are closing the funding gap from both sides.

Banks are aware of the risks associated with over-reliance on offshore funding and are taking measures to reduce the funding gap by slowing credit growth and increasing deposit growth.

Banks report that they have tightened lending conditions across a number of sectors, which should help dampen credit growth. Some banks place internal limits on their use of offshore market funding, and as they approach these limits they will constrain credit growth at the margin until deposit growth increases. Banks have also begun to increase interest rates to encourage growth in household deposits (figure 3.12). It remains uncertain whether greater competition for deposits will generate growth in the aggregate level of household deposits in the banking system or simply change the distribution of deposits across banks (see box B).

Dairy sector indebtedness

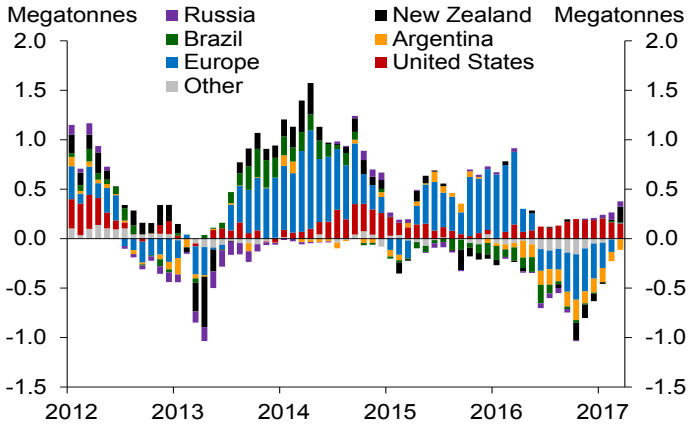
The dairy sector remains vulnerable and indebted...

The outlook for dairy farms has improved over the past six months, as global dairy prices increased in late 2016. But vulnerabilities in the sector remain a key risk to New Zealand's financial system. Debt in the sector has increased over the past two seasons, despite farms reducing their costs, and debt is high relative to income. The most indebted dairy farms will remain vulnerable to a fall in income until balance sheet positions are improved.

...despite a recovery in global dairy prices.

Global dairy prices have recovered strongly since mid-2016. Average dairy prices have increased 59 percent over the past year, in NZD terms, with whole milk powder prices increasing 45 percent. The recovery in prices was largely driven by a contraction of milk production in Europe, Brazil, Argentina and New Zealand (figure 3.13). This partly reflects farms responding to lower dairy prices, changes to government incentives in Europe and adverse weather conditions in the Southern Hemisphere.

Figure 3.13 Annual change in global milk production



Source: CLAL, Dairy Australia, Dairy Companies Association of New Zealand (DCANZ), EuroStat, United States Department of Agriculture, United States Dairy Export Council.

Note: See chart datapack for details on how the data are calculated.

The outlook for dairy production and prices is uncertain. European Union stockpiles of skim milk powder are at their highest level in more than 20 years, and prices could be affected if these stocks are sold. However, the removal of production quotas in Europe means that European farms will be more responsive to global price changes, which should help reduce future price volatility.

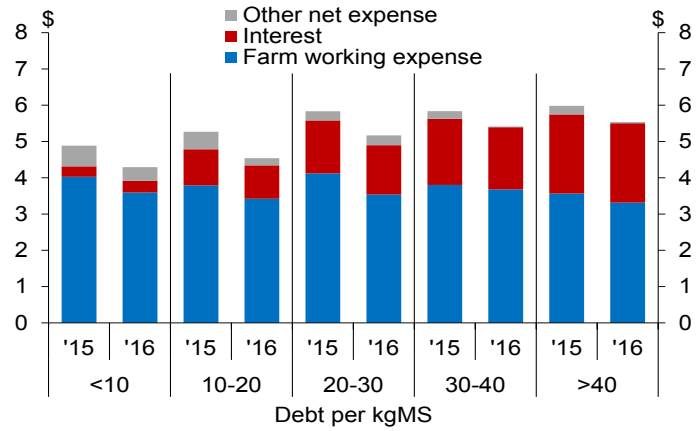
Wet conditions reduced Spring production in New Zealand, but farms have since managed to regain some of the lost production. Fonterra forecasts that production in the current season, which finishes at end-May, will be around 3 percent lower than the 2015-16 season.

Low prices have encouraged farms to reduce costs...

Dairy farms in New Zealand have reduced costs in response to the recent period of low prices. The average dairy farm's costs fell to $4.88 per kilogram of milk solids (kgMS) produced in the 2015-16 season, the lowest level since the 2007-08 season. The reduction in costs has largely been achieved by farms cutting their working expenses, which fell around 11 percent last season. This was driven by reduced use of supplementary feed and fertiliser, and lower spending on repairs and maintenance, which decreased by around one-third. Some of these cost reductions will be temporary, and the average dairy farm's costs are expected to increase in the current season, to just above $5 per kgMS.

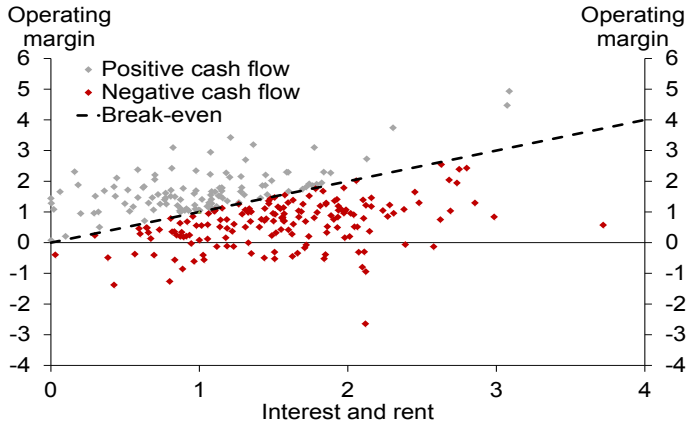
Currently, working expenses are similar across farms with different debt levels (figure 3.14). But the most-indebted farms have significantly higher interest costs, meaning they face higher overall costs. Indebted farms are vulnerable to future interest rate rises, particularly as they may struggle to generate further reductions in their working expenses.

Figure 3.14 Average dairy farm costs *(for seasons ending 2015 and 2016, per kgMS)*



Source: DairyNZ, RBNZ estimates.

Figure 3.15 Estimated farm cash flows for the 2015-16 season *(dollars per kgMS)*



Source: DairyNZ, RBNZ estimates.

Note: Each dot represents a farm included in the DairyNZ *Economic Survey.*

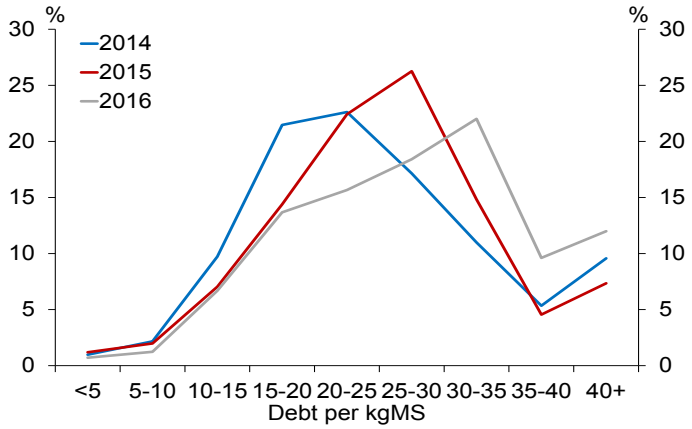
...and fewer farms are expected to make losses this season...

Around 60 percent of dairy farms made a loss in the 2015-16 season (figure 3.15). The proportion of farms facing losses this season is expected to fall, due to the recovery in global milk prices. It is estimated that less than 10 percent of farms will incur cash flow losses this season, based on Fonterra's forecast 2016-17 season payout of $6.15 per kgMS and dividend of $0.40 per kgMS. Some farms will incur a third successive season of cash flow losses, putting them under severe financial strain.

...but some farms remain highly indebted.

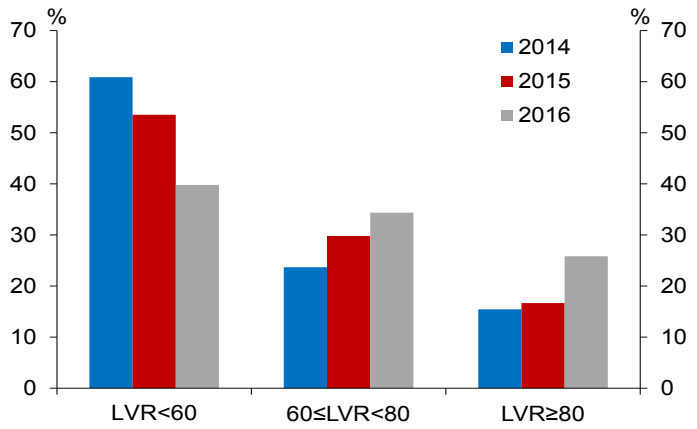
Dairy farms have been supported during this period of low prices by working capital loans from banks and interest-free loans from Fonterra. The average owner-occupied farm increased debt by over $100,000 during the 2015-16 season. The dairy sector's debt-to-income ratio remains well above 3. The additional debt has been spread evenly across farms, with the most indebted 20 percent of farms still owing around 50 percent of dairy sector debt. However, the share of vulnerable farms has increased. Around 44 percent of debt is held by farms with debt per kgMS of production exceeding $30, up from 27 percent in June 2015 (figure 3.16).

Figure 3.16 Distribution of dairy sector debt *(% of dairy sector debt)*



Source: DairyNZ, RBNZ estimates.

Figure 3.17 Distribution of dairy farm loan-to-value ratios *(% of dairy sector debt)*



Source: DairyNZ, RBNZ estimates.

Dairy farm prices were depressed by the period of low dairy returns, particularly in mid-2016. Farm prices have since partly recovered, with prices up 13 percent since June 2016. There have been relatively few forced sales, as banks have continued to take a medium-term view of the sector. This may have prevented farm prices from falling further.

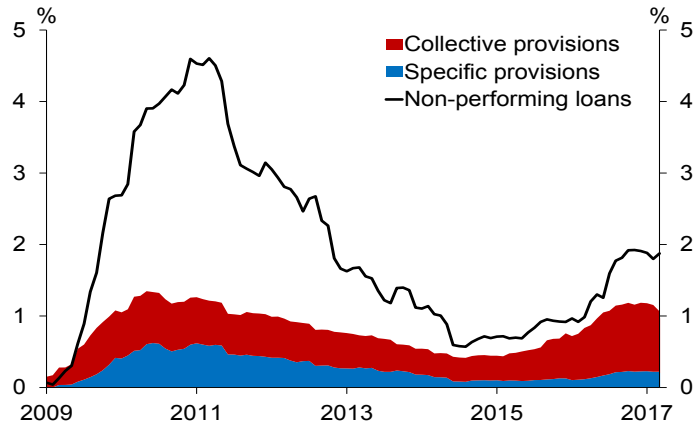
The combination of increased indebtedness and low farm prices has reduced equity levels in the dairy sector. Equity is an important buffer on which farms can draw, during periods of losses, and also insulates the banking system from stress in the sector. Equity levels in the dairy sector have deteriorated over the past two seasons, and more than a quarter of dairy sector debt is to farms with an LVR in excess of 80 percent (figure 3.17). It is expected that higher dairy prices in the 2016-17 season will enable profitable farms to rebuild their equity buffers to protect themselves, and the banks that lend to them, from future price volatility.

Losses to the banking system have been modest…

Developments in dairy prices have been reflected in the banking sector's exposure to the dairy sector. Annual dairy lending growth peaked at nearly 11 percent in September 2015 but has since reduced to around 1 percent as more farms have returned to profitability.

Around a quarter of dairy sector lending is to farms that are being closely monitored by banks. It is unlikely that all of these farms will default as this measure includes loans that only appear vulnerable on some generic risk characteristics, such as a high LVR, which do not fully represent overall farm vulnerability. But it is prudent for banks to monitor these loans. To date the banking system has not experienced material losses on dairy loans. Non-performing loans (NPLs) are less than 2 percent of total dairy lending, well below the peak in 2011 (figure 3.18). This partly reflects the financial support from Fonterra and the modest fall in dairy farm prices.

Figure 3.18
Dairy asset quality
(% of dairy lending)



Source: Private reporting, RBNZ BBS.

...but banks continue to monitor dairy sector exposures.

The uncertain outlook for dairy prices and the rising proportion of highly indebted farms means there remains a risk that NPLs could increase in coming seasons. The sector will remain vulnerable until the proportion of farms with unsustainable debt levels is reduced. This may take some time, as these farms need to build equity buffers with profits or exit the sector. The most indebted farms may find this more challenging, particularly if interest rates rise, as they typically have larger costs due to higher interest expenses.

As a result, banks should continue to closely monitor their exposures to the dairy sector. If farms become stressed, it should be quickly recognised in banks' risk models and potential losses should be adequately provisioned against.

Additional risks to New Zealand's financial system

Commercial property

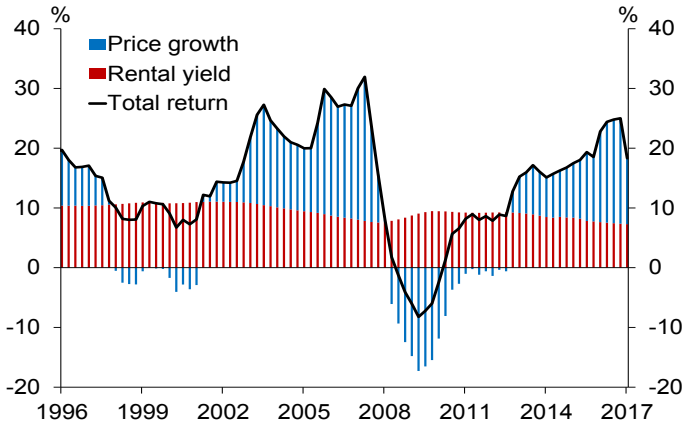
Commercial property prices are elevated...

Commercial property prices increased at a rapid pace in 2016, but appear to have stabilised in early 2017 (figure 3.19). Price growth over recent years has been underpinned by strong investor demand. In the low interest rate environment, commercial property yields have been attractive relative to other assets. However, a gradual compression in yields and an increase in global interest rates may weigh on investor demand in the future. High returns in the commercial property sector over the past year mask regional variation. Returns in Auckland and Wellington have been high, whereas prices in the Christchurch office market have declined as a significant amount of post-earthquake supply has come on stream.

The commercial property market has been supported by solid economic fundamentals. In the retail and industrial sectors, vacancy rates are around their lowest levels in the past 20 years (figure 3.20). Office vacancy rates are also approaching record lows in Auckland, and they declined sharply in Wellington in late-2016 after the Kaikoura earthquake resulted in the closure of a number of city centre offices. There is still some uncertainty about the longer-run impact of the earthquake on the office stock in Wellington. In contrast, office vacancy

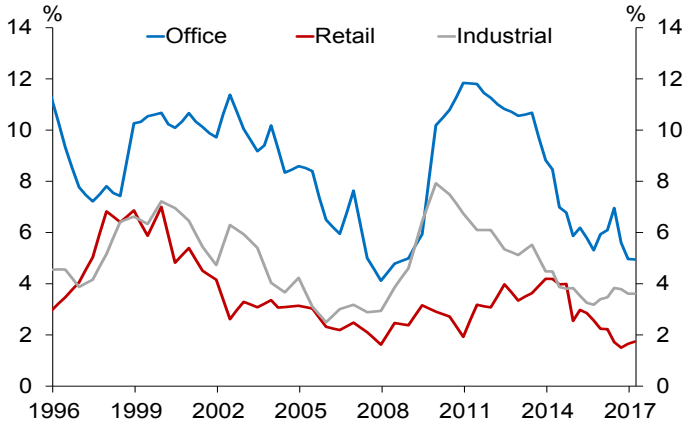
rates in Christchurch have continued to increase as several new office developments have been completed in the city centre. As tenants move back into the city centre, vacancy rates are expected to rise in Christchurch's suburban office market.

Figure 3.19 Annual commercial property returns



Source: Jones Lang LaSalle (JLL).

Figure 3.20 Commercial property vacancy rates

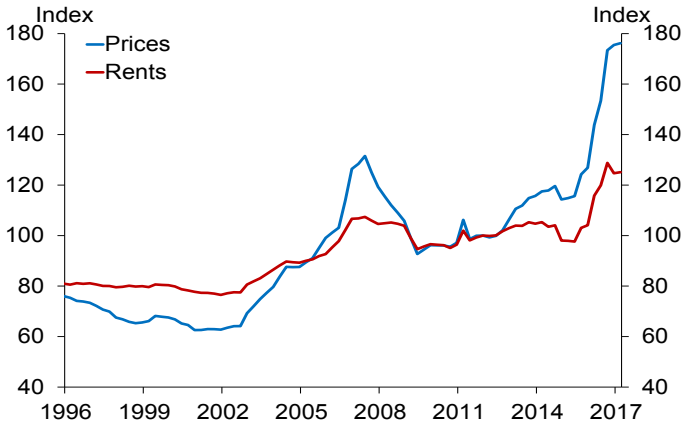


Source: JLL.

...and have grown faster than rents.

Rents also grew rapidly in 2016 (figure 3.21). Most notably, retail rents in central Auckland increased by almost 30 percent in 2016, driven by large international retailers competing for prime space. While rental growth in the Auckland and Wellington office and industrial markets has been strong, it has been outpaced by price growth over recent years. Capital gains in excess of rental growth cannot continue indefinitely, and there is a risk that investors and developers could face losses if their investment decisions are based on unrealistic expectations for capital gains. At this point, the addition to New Zealand's commercial property stock is expected to be modest over the next few years (around 2 percent per annum), reducing the risk of a sharp correction in prices.

Figure 3.21 Commercial property prices and rents *(December 2011 = 100)*



Source: RBNZ calculations, JLL.

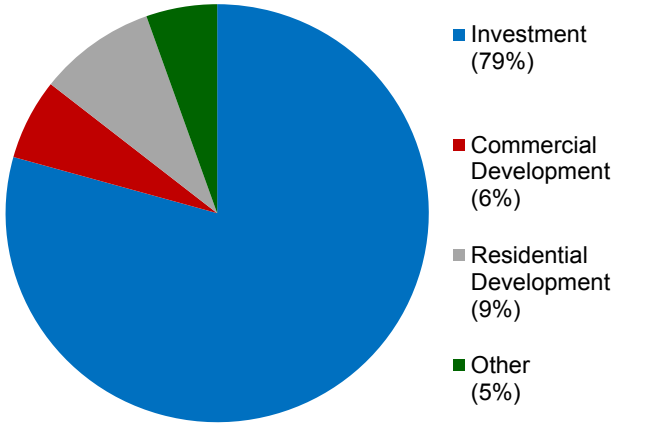
Banks are being more selective in their lending…

Reflecting strong demand, banks expanded their lending to the commercial property sector by around 12 percent in the year to March. Asset quality has continued to improve, with the share of commercial property loans that are non-performing at post-GFC lows. The debt-to-income ratio of the commercial property sector has drifted up slightly, over the past year, but remains well below its pre-GFC peak.

Commercial property exposures currently account for around 8 percent of banks' total lending. Given general funding pressures and heightened risks in the property sector, banks have limited appetite to further increase their share of lending to the commercial property sector, in particular for residential development, which accounts for around 9 percent of commercial property lending (figure 3.22). As a result, they have become more selective in the developments they fund by focusing on existing customers and tightening lending standards. This moderation in risk appetite for property development appears relatively measured, but may have broader implications for the level of residential construction activity in the economy.

As a result of major banks reducing their risk appetite, a number of non-bank lenders have become more active in funding property development, as have some of the domestic New Zealand banks. While this is likely to increase the risk profile of these lenders, the financial stability implications are minor, given the relatively small size of these institutions.

Figure 3.22 Composition of banks' commercial property lending *(as at 31 March 2017)*



Source: RBNZ BBS.

Note: Percentages do not sum to 100 due to rounding.

…and continue to monitor risks in the sector.

Overall, risks in the commercial property sector appear relatively contained at present. The recent signs of a stabilisation in prices are encouraging. However, there are pockets of the market where risks remain elevated, including the secondary retail market, particularly in Auckland, and the Christchurch office market. To date, bank lending to the commercial property sector appears to have been prudent. However the sector has historically been a source of large bank losses, so it is important that banks continue to closely monitor their commercial property exposures.

Box A

Vulnerability of owner-occupiers to higher mortgage rates

The ability of households to service their mortgage debts under a range of economic scenarios, including a sharp and unexpected increase in mortgage rates, is important for financial stability. Widespread difficulty in meeting mortgage payments can precipitate or exacerbate financial instability by causing borrowers to either default, sell their house or cut their consumption sharply.

New Zealand is particularly vulnerable to a sharp rise in mortgage rates as the banking system funds a large proportion of its mortgage credit from offshore wholesale markets. The cost of this funding can increase sharply if there is an unexpected increase in global interest rates or a change in investor risk appetite, and banks are likely to pass on the higher funding costs to customers through higher mortgage rates.

Banks' loan origination standards partly guard against the risk that higher mortgage rates cause household stress by ensuring that new borrowers are able to continue servicing their loans if mortgage rates increase. Some banks incorporate a buffer of around 2 percentage points in their serviceability assessments, or a minimum interest rate of about 7 percent.[1] However, serviceability assessments also often rely on assumptions about minimum essential living expenses and the reliability of income sources, and typically do not test against large increases in interest rates.

The Reserve Bank has conducted a simple stress test of current owner-occupier borrowers to an increase in mortgage rates to 7 percent and 9 percent. An interest rate of 7 percent is close to the average two-year mortgage rate over the past decade, whereas 9 percent provides a more extreme but still plausible scenario. Data from the *Household Economic Survey* (HES) were used to assess the resilience of a sample of existing mortgages originated before July 2016, while survey data on the debt-to-income (DTI) ratios of bank lending flows were used to assess the resilience of more recent borrowers.[2]

DTI ratios tend to be highest for recent borrowers who have had limited time to pay down debt or increase their incomes, and because house price inflation has been strong relative to income growth in recent years. After removing outliers, 19 percent of recent borrowers have DTI ratios above 5 compared to 6 percent in the overall stock of borrowers (figure A1). The share of new borrowers with high DTI ratios has increased in recent years (figure 3.6), which, if maintained, will increase the indebtedness of the overall stock of borrowers over time.

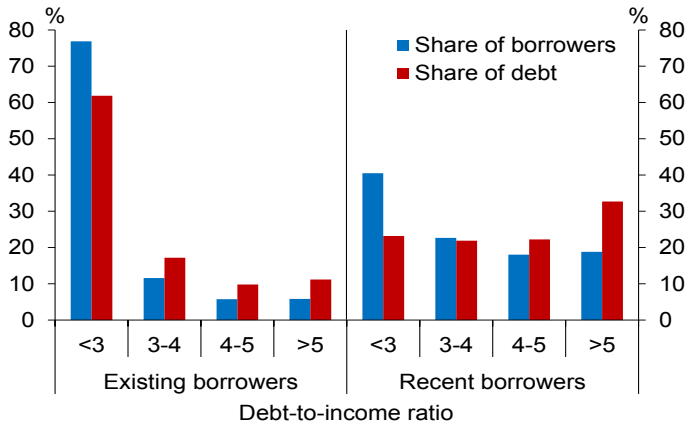
The vulnerability of borrowers to higher mortgage rates was assessed by comparing borrower incomes to mortgage payments and other essential expenses. Essential expenses are estimated using the HES, and are calculated based on the lower quartile expenditure for a given household type and income level. The estimated essential expenses generally increase with household income.

Many borrowers are estimated to be vulnerable to higher mortgage rates (figure A2). It is estimated that around 4 percent of all borrowers, representing 6 percent of the overall stock of mortgage debt, and 5

1 The Australian Prudential Regulation Authority has provided guidance to Australian banks that states that they should assess a potential borrower's ability to service their mortgage if mortgage rates were at least 2 percent above the current mortgage rate, and at a minimum mortgage rate of 7 percent.

2 Data used in this analysis are imperfect. For example, the DTI survey data include a significant quantity of 'outlier' borrowers that have been excluded from the analysis.

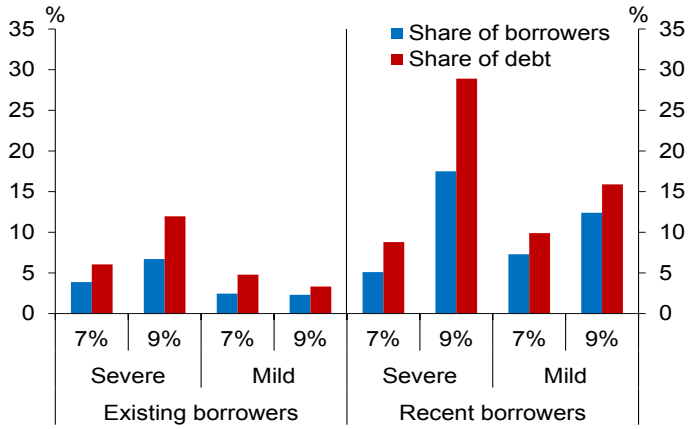
Figure A1
DTI ratio distribution for existing and new borrowers



Source: Statistics New Zealand, private reporting from the five largest banks.

Note: 'Existing borrowers' reflect borrowers surveyed in the HES between July 2013 and June 2016. 'Recent borrowers' represent those who borrowed between October 2016 and March 2017.

Figure A2
Share of borrowers in mild and severe stress by interest rate



Source: Statistics New Zealand, private reporting from the five largest banks.

Note: Borrowers under 'severe' stress comprise those that could not meet their essential expenses. Borrowers under 'mild' stress comprise those that would have only a small buffer for discretionary spending after meeting their mortgage payments and essential expenses. See chart datapack for more details.

percent of recent borrowers, representing 9 percent of recent mortgage debt, could not meet their essential expenses ('severe stress') if mortgage rates were 7 percent. A further 2 percent of all borrowers and 7 percent of recent borrowers would only have a small buffer for discretionary spending after meeting their mortgage payments and essential expenses ('mild stress'). Stress would be much higher at a 9 percent mortgage rate, with 7 percent of all borrowers and 18 percent of recent borrowers expected to face severe stress.

Auckland borrowers appear particularly vulnerable to higher mortgage rates. Around 5 percent of existing Auckland borrowers are estimated to face severe stress if mortgage rates were 7 percent, compared to 3 percent of borrowers outside of Auckland. The share of recent borrowers in severe stress is also expected to be greater in Auckland, particularly if mortgage rates rose to 9 percent.

There is evidence that borrowers with high DTI ratios are the most vulnerable to rising mortgage rates. At a mortgage rate of 7 percent, around half of existing borrowers with DTI ratios above 5 are expected to face severe stress. However, this represents just 3 percent of borrowers.

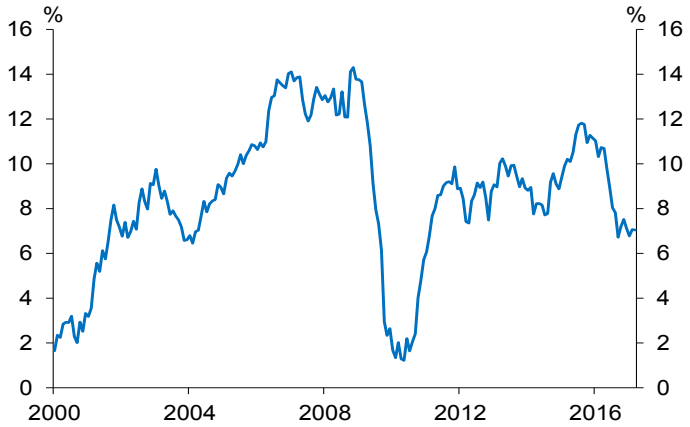
Overall, this analysis suggests that a significant proportion of New Zealand borrowers are vulnerable to a material increase in mortgage rates. A sharp and unexpected rise in mortgage rates could see the most vulnerable households default, sell their houses or reduce consumption to repay debt. Recent borrowers in Auckland and borrowers with high DTI ratios appear most vulnerable, signalling that a continued high share of lending at high DTI ratios is concerning and may present a risk to the housing market and financial stability.

Box B

Explaining household deposit growth in New Zealand

Household deposits are an important source of funding for the banking system, representing 40 percent of bank funding. As deposits are typically a stable source of funding, they are a significant component of banks' core funding. Since mid-2015, annual growth in household deposits has slowed from around 11 percent to 7 percent (figure B1). This has contributed to an increase in New Zealand banks' reliance on offshore funding, increasing their exposure to international risks that could adversely affect the cost or availability of funding.

Figure B1 Annual household deposit growth



Source: RBNZ BBS.

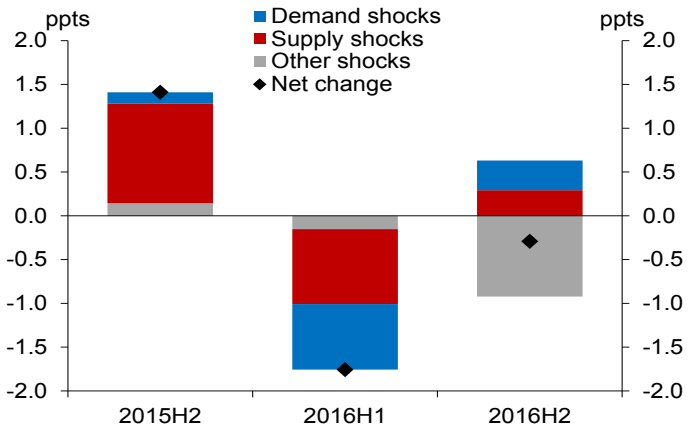
Some of the slowing in household deposit growth can be attributed to a rise in business deposits and wholesale deposit accounts, reflecting the natural flow of deposits through sectors of the economy as payments and transfers are made. This could be associated with the increase in household consumption growth in 2016, and there is also evidence that households shifted from investing savings in bank deposits to other investment products. This is likely to reflect households seeking greater investment returns in other assets, such as equities.

Has the recent weakness in household deposit growth been driven by demand or supply factors?

The Reserve Bank has used a model to identify how demand and supply shocks affect household deposit growth.[1] In the model, a household deposit demand shock is assumed to be driven by banks' relative cost of funding, for example, if a bank finds it more expensive to raise funds in offshore markets and therefore needs to attract more household deposits. By contrast, a household deposit supply shock originates from households, and is identified in the model as a change in household risk preferences. Other factors such as relative asset returns and volatility, income growth and consumption growth also influence demand and supply dynamics, and these factors are identified by the model as 'other shocks'. The contributions of the supply and demand factors to six-monthly changes in household deposit growth over 2015 and 2016 are shown in figure B2.

1 This analysis was conducted by the Reserve Bank based on the methodology in Chiu, C and J Hill (2015), 'The rate elasticity of retail deposits in the United Kingdom: a macroeconomic investigation', Bank of England *Staff Working Paper* No. 540.

Figure B2
Drivers of household deposit growth
(de-meaned change in the six-month deposit growth rate)



Source: RBNZ estimates.

Note: The shocks in the chart represent the contributions to the deviation from average household deposit growth over 2010-2016, averaged across the four largest banks. Positive values indicate deposits growing faster than average, and negative values indicate deposits growing more slowly than average.

The analysis suggests that in the second half of 2015, above average household deposit growth was largely attributable to a strong supply of deposits. However, household deposit growth fell below average during the first half of 2016, as both deposit supply and demand weakened. During this period, the gap between credit and deposit growth emerged and banks increased their reliance on offshore funding. In the second half of 2016, banks tried to close the funding gap by increasing deposit rates and households shifted towards holding more deposits. However, deposit growth remained below its trend level due to 'other shocks', for example, strong household consumption growth.

Can banks raise deposits by increasing deposit rates?

To estimate the cost of raising deposit funding, the Reserve Bank developed a separate model which assesses the sensitivity of deposit levels to deposit rates.[2] This model estimates that a 100 basis point increase in the six-month term deposit rate increases the level of household deposits by 1-1.5 percent ($1.5-2.4 billion) after 4-6 quarters, after controlling for economic and financial conditions.

It also shows that the overall level of retail deposits (which includes household and business deposits) increases by less in dollar terms than household deposits in response to an increase in the deposit rate. This suggests that higher deposit rates could cause funds to transfer from business deposits to household deposit accounts.

Overall, the analysis suggests that household deposits are likely to be sensitive to interest rates, and banks may be able to attract some additional household deposits by increasing deposit rates. However, total retail deposits are relatively insensitive to deposit rates.

2 A forthcoming *Analytical Note* will present a more detailed summary of the modelling. This analysis is based on a vector autoregression model of household deposit growth, household credit growth, the six-month term deposit interest rate, gross domestic product growth, net working age migration, the trade balance, and the Merrill Lynch Option Volatility Estimate (MOVE) index.

Chapter 4

Soundness and efficiency of New Zealand's financial system

Despite the key risks outlined in chapter 3, New Zealand's financial system remains sound and appears to be efficient relative to international peers and recent history. The banking system has buffers of capital, liquid assets and stable funding in excess of current regulatory requirements. Bank funding costs have stabilised since the last *Report* and bank profitability remains robust. Lending growth has been strong but credit conditions have tightened recently and are expected to remain firm.

Aggregate solvency margins in the insurance sector have reduced in the past six months, as insurers' profits were below their dividend payouts. Despite this, the sector is well positioned to absorb the insurance costs of the Kaikoura earthquake, which are estimated to range from $3-6 billion. The majority of claims from the Canterbury earthquakes have now been settled, with a small share yet to be paid.

There have been no significant outages in payment and settlement systems in the past six months. Retail payments are now being processed more quickly and work is under way to further enhance the robustness of payment systems.

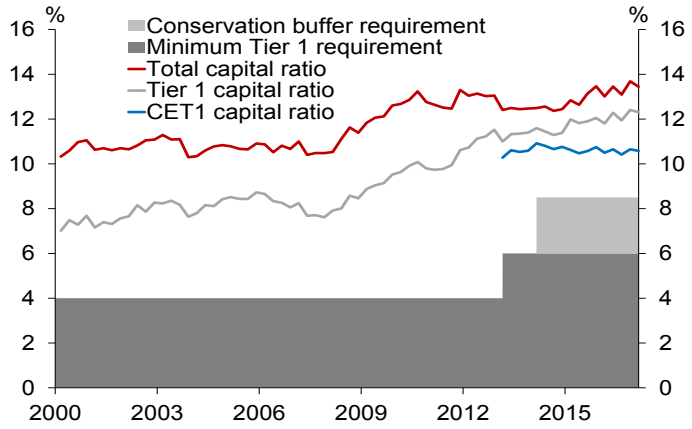
Banking sector

Bank capital ratios are well above minimum requirements...

New Zealand's banking system continues to maintain capital buffers well in excess of minimum requirements (figure 4.1). Capital ratios have increased since the global financial crisis (GFC), reflecting a range of regulatory changes as well as greater capital adequacy expectations from investors.

Most of the more recent growth in total capital ratios has been achieved through higher levels of additional Tier 1 (AT1) and Tier 2 capital, rather than with higher quality common equity Tier 1 (CET1) capital. The system's total capital ratio has grown from 12.8 percent to 13.4 percent of risk-weighted assets (RWAs) in the two years to March 2017, while the system's CET1 capital ratio has remained flat at 10.6 percent.

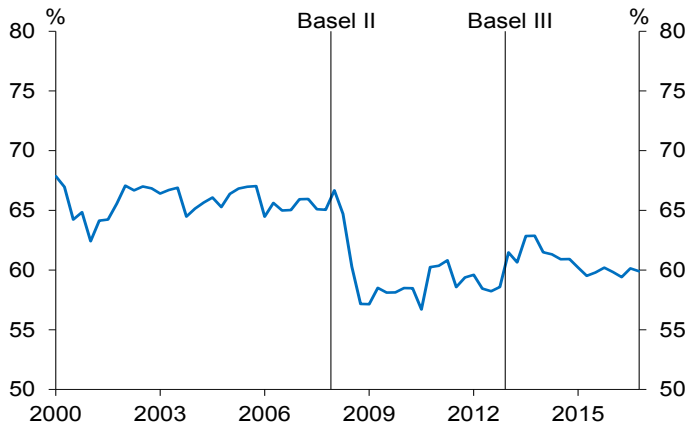
Figure 4.1
Regulatory capital ratios of locally incorporated banks
(% of RWAs)



Source: RBNZ *Capital Adequacy Survey,* registered banks' *Disclosure Statements.*

Looking over a longer time horizon, the trend in capital ratios since the GFC has been influenced by changes in the average risk weights applied to banks' exposures (figure 4.2). The change in average risk weights reflects a combination of changes in banks' risk profiles, and changes in the way risk weights are calculated. Average risk weights fell in New Zealand after the adoption of Basel II in 2008, but increased following subsequent changes to the Reserve Bank's capital framework, including the introduction of Basel III in 2013. The Reserve Bank is currently reviewing the approach to calculating risk weights as part of a comprehensive review of the domestic capital adequacy framework (see chapter 5).

Figure 4.2
Risk-weighted assets to total assets
(locally incorporated banks)



Source: Registered banks' *Disclosure Statements.*

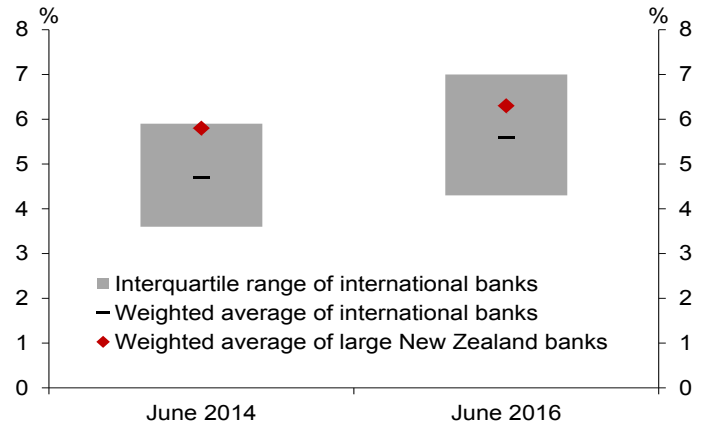
Note: See chart datapack for details on how the data are calculated.

...making the banking system resilient to shocks.

As part of its 2016 Financial Sector Assessment Programme (FSAP), the International Monetary Fund (IMF) assessed the solvency of the New Zealand banking system to be resilient to severe shocks. That judgement was partly based on the results of a range of stress tests tailored to the specific vulnerabilities of the New Zealand system. Details of the FSAP, including the stress tests, were published in May.

The Reserve Bank estimates that the capital ratios of New Zealand banks are around or slightly above the median of international peers, when adjusted for differences between capital adequacy frameworks. However, a comparison of the leverage ratios of large New Zealand banks to a group of large international banks shows that New Zealand banks' capital levels have become relatively less conservative over time (figure 4.3).

Figure 4.3
Leverage ratios of large New Zealand and international banks
(% of unadjusted loans)



Source: Bank for International Settlements, RBNZ *Capital Adequacy Survey*.

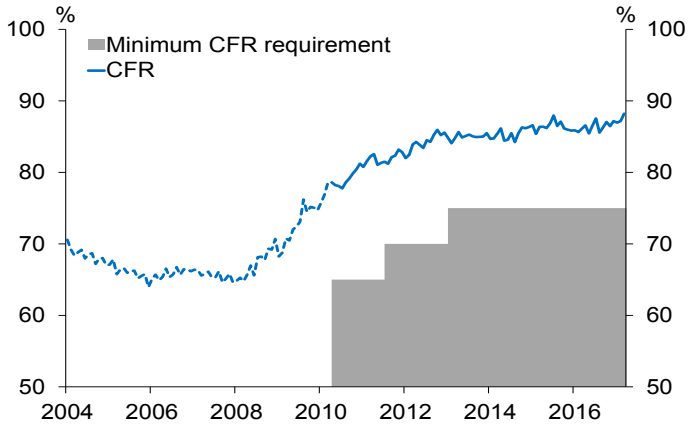
Notes: See chart datapack for details on how the data were calculated.

Liquidity buffers remain robust.

All banks are comfortably meeting the Reserve Bank's core funding ratio (CFR) requirement, which requires banks to fund at least 75 percent of their loan portfolio with stable funding (figure 4.4). The CFR requirement reduces the proportion of a bank's funding that it may not be able to replace in the event of a disruption in funding markets. The banking system's CFR has significantly improved since the GFC, enhancing the resilience of the system.

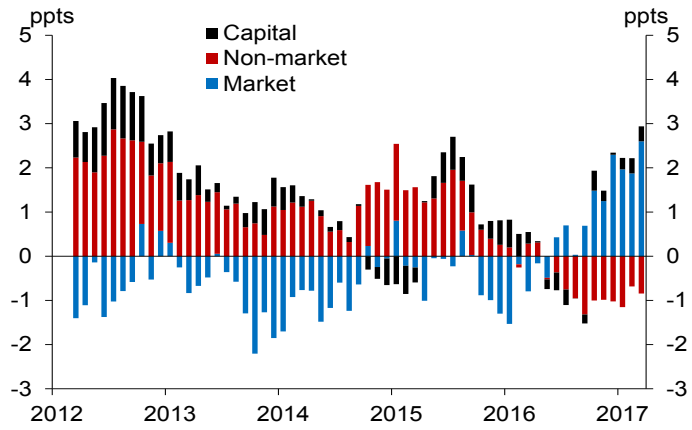
In the past six months, banks have increasingly used long-term market funding, rather than deposits, to maintain their CFRs (figure 4.5). This reflects credit growing faster than deposits. Although long-term market funding is more stable than short-term market funding, it does carry risks compared to deposit funding (see chapter 3). Therefore a continuation of this trend would increase the vulnerability of banks' funding positions. However, banks are currently attempting to narrow the gap between credit growth and deposit growth, by increasing deposit rates and tightening credit conditions.

Figure 4.4
Banking system core funding
(% of gross loans and advances)



Source: RBNZ *Liquidity Survey*, RBNZ *Standard Statistical Return* (SSR).

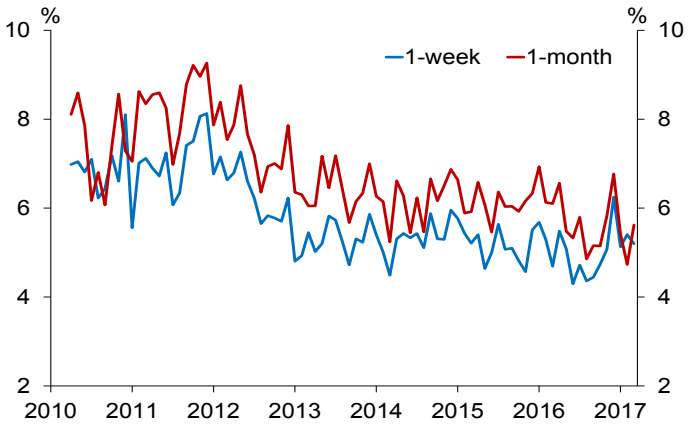
Figure 4.5
Annual change in contribution to CFR by funding type



Source: RBNZ *Liquidity Survey*.

All banks are complying with the regulatory mismatch ratio requirements, which are designed to ensure that banks hold sufficient liquid assets to match their projected cash outflows during a one-week and a one-month period of stress. However, the system's mismatch ratios have trended downwards since 2011 (figure 4.6) and there has been significant convergence in the mismatch ratios of the major banks.

Figure 4.6 Banking system mismatch ratios



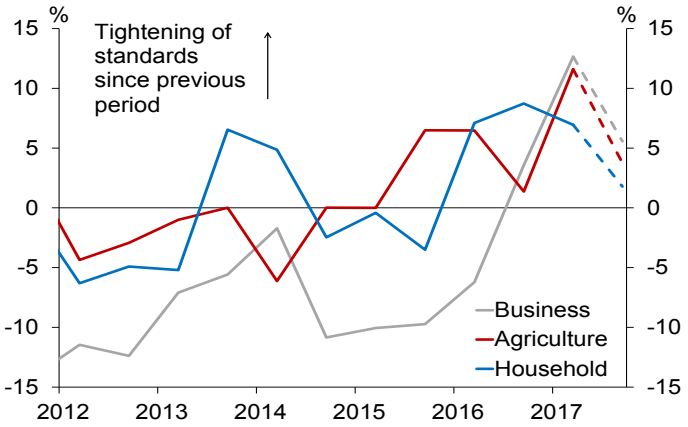
Source: RBNZ *Liquidity Survey*.

In its 2016 FSAP, the IMF judged the New Zealand banking system's liquidity positions to be resilient to severe shocks. This was based on a set of stress tests designed to assess banks' short-term resilience to an abrupt and sudden withdrawal of funding.

Lending conditions have tightened...

Lending conditions have tightened across all main sectors (figure 4.7). Banks have been increasingly cautious in their lending to the dairy and commercial property sectors, where they have tightened lending standards and increased loan pricing. Banks expect the cost of loans to further increase, which may see credit growth continue to slow.

Figure 4.7 Change in bank lending standards *(net % of banks)*



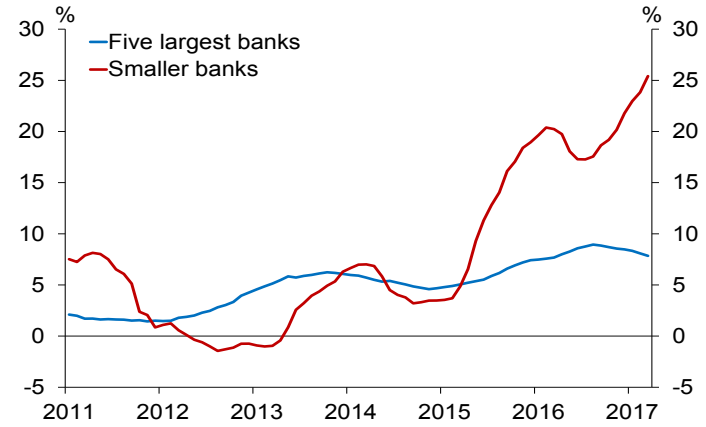
Source: RBNZ *Credit Conditions Survey.*

Note: This chart shows the percentage of banks reporting a tightening of price or non-price lending standards minus the percentage reporting an easing. Individual bank responses are weighted by market share. The dotted line is the expected change six months ahead.

...but small bank lending has grown rapidly.

New Zealand registered banks outside the five largest banks ('smaller banks') have grown lending much faster than the larger banks over the past two years. This is most evident in their housing lending, which grew by 25 percent in the year to March, compared to 8 percent for the five largest banks (figure 4.8). Smaller banks have doubled their share of new mortgage commitments since 2014, from about 4 percent to 8 percent, by value, and have increased their share of outstanding housing credit.

Figure 4.8
Annual housing lending growth



Source: RBNZ *Bank Balance Sheet* (BBS).

Note: 'Smaller banks' is comprised of all New Zealand registered banks other than the five largest New Zealand registered banks. The smaller bank series has been adjusted to account for breaks when Heartland and the Co-operative Bank entered the banking sector.

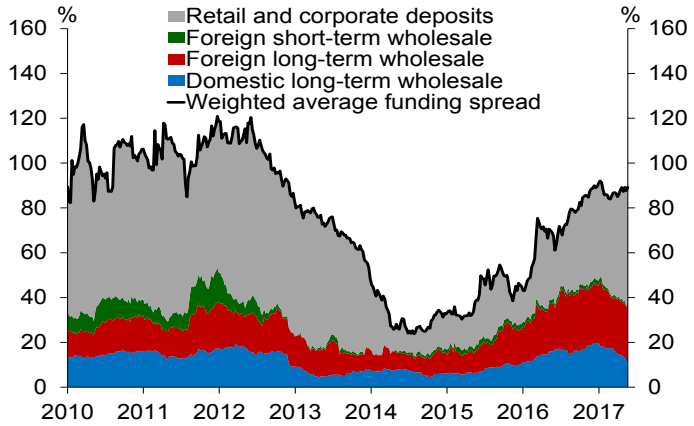
Rapid lending growth carries risk, especially if it is driven by weaker origination standards and increasing numbers of new (unfamiliar) customers. It may also be a concern if banks' internal systems and resources become stretched by the operational needs of a rapidly growing loan portfolio.

To date, there has not been a significant increase in the risk profile of smaller banks' new lending according to the risk metrics that the Reserve Bank monitors, such as the loan-to-value ratio (LVR) profile and the share of investor and interest-only loans. However, it is possible that other risk characteristics of new lending may have changed. The Reserve Bank will continue to closely monitor the lending growth of these banks.

Funding costs have stabilised…

Favourable conditions in international funding markets have seen the cost of new funding for banks stabilise since the last *Report,* after rising significantly through 2016 (figure 4.9). However, banks have sought to maintain their deposit funding bases, resulting in strong competition for deposits and increased deposit spreads (see chapter 3). Bank funding costs remain below their levels in the years following the GFC, although there remains a risk that they could increase if volatility returns to international funding markets.

Figure 4.9
Bank marginal funding spread
(spread to the 90-day bank bill rate)



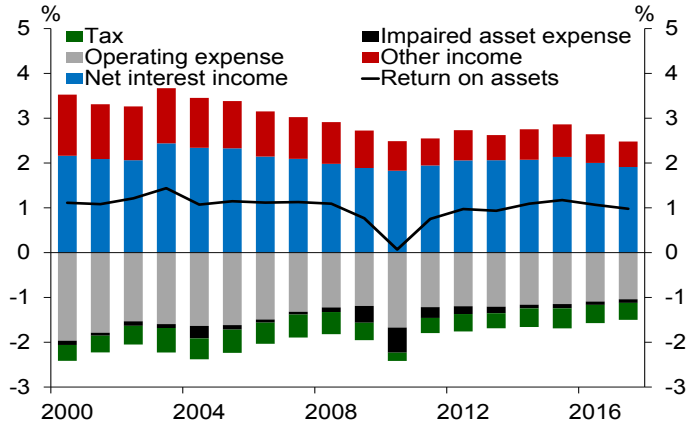
Source: Bloomberg, RBNZ estimates.

Note: The shaded areas measure the contribution of each funding source to the overall marginal funding spread.

...and low NPLs have supported bank profitability.

The profitability of New Zealand's banking system remains high by international standards. In the year to March 2017, the system achieved a return on assets of 1 percent, slightly lower than the 1.2 percent seen at the beginning of 2015. The recent fall in profitability has been driven by a narrowing of net interest margins and a fall in non-interest income (figure 4.10).

Figure 4.10 Annual banking system income and expenses *(% of total assets)*



Source: RBNZ *Income Statement Survey* (ISS), registered banks' *Disclosure Statements*.

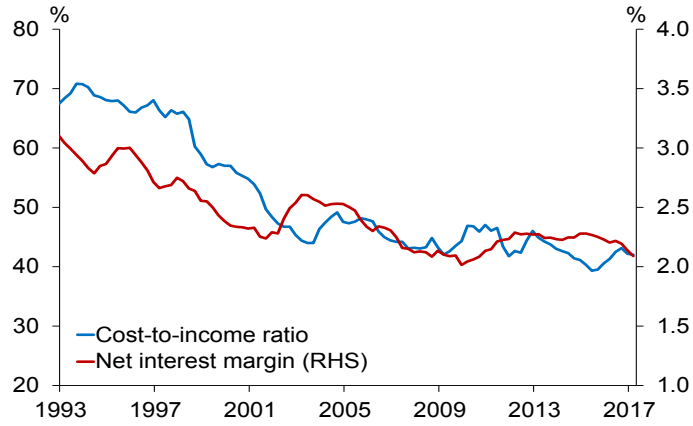
Banking system profitability has been supported by robust asset quality across most sectors. The system's non-performing loans (NPLs) ratio remains low, at 0.5 percent of assets in March. Mortgage lending NPLs are particularly low, at 0.2 percent of total mortgage lending, having fallen consistently since the GFC. Agriculture NPLs remain elevated due to stresses in the dairy sector, but appear to have stabilised at around 1.5 percent of agriculture lending.

The banking system appears to be relatively efficient.

New Zealand's banking system appears to be operating efficiently, when assessed against international peers and over time. The banking system continues to perform well relative to other OECD countries on a range of simple efficiency indicators (table 4.1). Care must be taken when making international comparisons, as the efficiency indicators are affected by the condition of a country's financial system and economy. This may boost the indicators for New Zealand relative to other OECD countries whose financial systems and economies are still recovering from the GFC.

Some measures also point to an improvement in New Zealand banks' efficiency over time (figure 4.11). The system's net interest margin, which had previously been high by international standards, has trended downwards since the early 1990s. More recently, strong competition has seen net interest margins fall after rising in the years following the GFC. In addition, the system's cost-to-income ratio has edged lower over time, indicating efficiency improvements in banks' use of resources.

Figure 4.11 Cost-to-income ratio and net interest margin



Source: Registered banks' *Disclosure Statements*, RBNZ ISS.

Table 4.1
Simple measures of New Zealand banks' efficiency relative to OECD peers
(%, unless specified, at Q1 2017 or latest data)

	New Zealand	OECD median[a]	OECD maximum	OECD minimum	New Zealand rank[b]
Profitability					
Return on assets[c]	1.4	0.8	1.9	0	7 (of 32)
Return on equity[d]	17.1	10.5	19.9	0.3	5 (of 32)
Non-interest expenses to gross income[e]	42	61.4	78.8	42	1 (of 30)
Intermediation					
Spread between loan and deposit rates[f] (*basis points*)	215	271	1011	114	7 (of 20)
NPLs to total gross lending[g]	0.5	3.1	37	0.5	1 (of 30)

Source: European Central Bank, International Monetary Fund, registered banks' *Disclosure Statements*, RBNZ ISS, RBNZ SSR, RBNZ BBS.

Notes:

(a) Median of the sample of OECD countries for which data are available for each metric.

(b) 'New Zealand rank' is scaled so that the top ranking country is the most efficient for that particular metric, i.e., 1 of 20 means New Zealand is the most efficient country of the 20 OECD countries in the sample.

(c) Return on assets = (net annual income before tax / average total assets) x 100, a measure of banks' efficiency in the use of assets.

(d) Return on equity = (net annual income before tax / average total capital) x 100, a measure of banks' efficiency in the use of capital.

(e) Non-interest expenses to gross income = (net annual operating expenses / (net annual interest income + annual non-interest income)) x 100, a measure of banks' efficiency in the use of resources.

(f) Spread between loan and deposit rates = (difference between the weighted average loan rate and weighted average deposit rate, excluding rates on interbank loans and deposits) x 100, a measure of the cost of intermediation.

(g) NPLs to total gross lending = (total non-performing loans / total gross lending) x 100, a measure of banks' allocative efficiency.

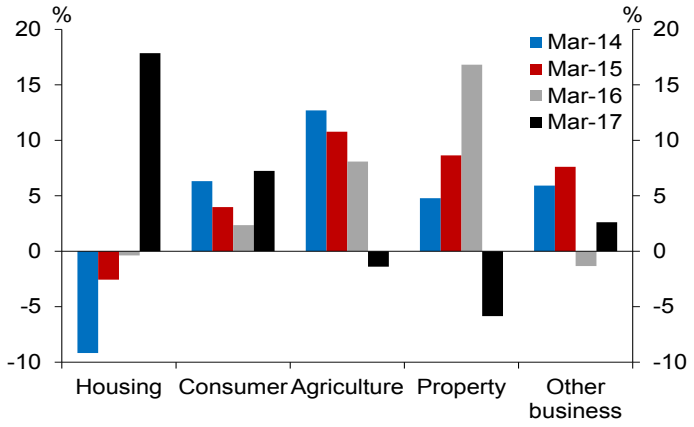
There is likely to be room for improvement. The number of banks in New Zealand has grown from 19 in 2010 to 24 in 2017, suggesting that regulatory barriers to entry are not prohibitive. However, no recent entrants have yet established a significant presence – in aggregate they account for just 1.8 percent of banking system assets. This points to high entry costs for retail banking, although the development of online and mobile business models may bring some competitive pressure to retail banking in the future.

Non-bank lending institution sector

Non-bank lending is growing…

New Zealand's non-bank lending institution (NBLI) sector grew in the year to March, with lending increasing by 5.5 percent. However, NBLI lending growth has been relatively slow compared to that in the banking sector. Until recently, relatively strong growth in lending to the commercial property and agriculture sectors had been offset by a contraction in housing lending, but this has since reversed (figure 4.12).

Figure 4.12 Annual NBLI lending growth by sector



Source: RBNZ SSR.

Note: Growth figures have been adjusted to remove breaks due to large NBLIs leaving the sector to become banks.

…but is small relative to the banking sector.

The NBLI sector remains small relative to the banking sector: its $13 billion of lending is equivalent to about 3 percent of financial system lending. Nevertheless, the sector plays a significant role in the consumer loan market, where it represents around one-third of outstanding lending. Although NBLI housing lending grew 18 percent in the year to March, NBLIs continue to represent less than 1 percent of the housing loan market. This suggests that the impact of any leakage to the sector from LVR policy has been small. While some NBLIs have significantly grown their housing loan portfolios since the LVR policy was introduced, others have cut back their lending.

Insurance sector

Domestic insurers' solvency margins have fallen...

In late 2015 and early 2016, aggregate insurer solvency margins in New Zealand fell, due to dividend payouts being in excess of profits. Profits reported in mid-to-late 2016 were stronger and, as a consequence, solvency margins appear to have stabilised at lower levels. Reduced solvency margins may point to greater sophistication in insurers' approaches to capital management. But they also mean that some insurers are likely to be increasingly reliant on shareholder support to maintain solvency margins in a period of material losses.

...and recent events may put further pressure on general insurers.

Financial reporting to date does not include costs for general insurers from the most recent natural disasters, including the Kaikoura earthquake, the Port Hills fire and several storms. These events are likely to have significantly reduced profits and to have lowered solvency margins in the sector. Affected insurers will be under operational pressure due to the high claims volumes from these events, as well as the remaining Canterbury earthquake claims and business as usual claims.

The sequence of these recent events serves to remind all insurers of the need to have sufficient capital and reinsurance to cover a single very large catastrophe event (e.g. a major earthquake or pandemic), as well as to cover several smaller unexpected and unprovisioned losses occurring in a short period of time.

The cost of Kaikoura earthquake claims continues to be assessed...

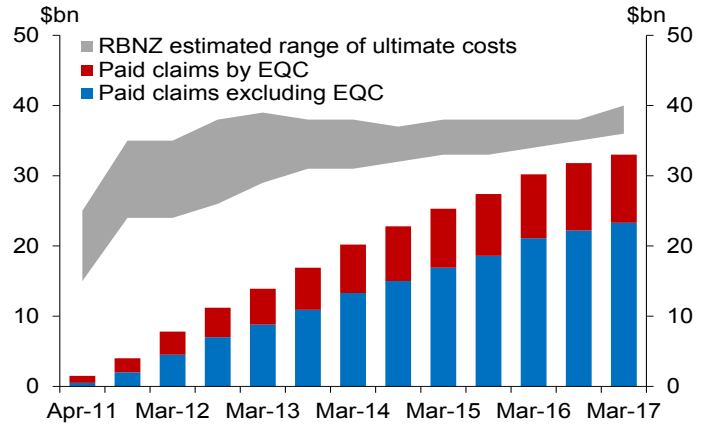
An early estimate of the insurance claim costs for the Kaikoura earthquake, which occurred on 14 November 2016, is $3-6 billion, including claims on the Earthquake Commission (EQC). The overall cost of the earthquake, including costs to the Crown, is estimated to be around $2 billion higher than the insurance industry estimates. Overall insurance claims are significantly lower than for the Canterbury earthquakes, due to the earthquake being centred on a lightly populated rural area. However, Wellington was significantly affected and information to date suggests that the bulk of the claim costs will relate to commercial claims in Wellington. As at 31 March 2017, $260 million of claims had already been paid.

While there is substantial uncertainty over the claim costs, they appear to be well within reinsurance limits for all insurers. Compared with the Canterbury earthquakes, the insurance sector is much better positioned to absorb these costs due to significantly higher levels of reinsurance and capital.

...while progress on Canterbury earthquake claims is slow.

The rate of payment of Canterbury earthquake claims has continued to slow as the remaining claims are generally the most complex and, in many cases, are in dispute or litigation. At end-March 2017, insurers had paid $33 billion, with about $1.2 billion paid over the last six months (figure 4.13). In the prior six months the amount paid was $1.6 billion.

Figure 4.13 Canterbury earthquake paid claims



Source: EQC, RBNZ.

Note: The estimated range of ultimate costs does not include the full extent of potential costs of remediating faulty repairs/rebuilds, which are currently not well quantified.

Insurers' estimates of their claim costs have recently increased at almost the same rate as claim payments, and we anticipate there will be further increases. As a result, the Reserve Bank's estimate for the ultimate claim costs, including EQC claims, has been revised up to around $36-40 billion (from $35-38 billion at the time of the last *Report*). The outstanding claims yet to be paid are estimated to be in the range of $3-7 billion.

Some insurers should improve catastrophe risk management frameworks.

The Kaikoura and Canterbury earthquakes highlight the exposure of insurers to catastrophe risk, which is the accumulation of claims arising from a common cause over a short period of time, such as natural disasters, man-made disasters and pandemics.

The Reserve Bank recently surveyed licensed insurers to understand their assessment of their exposure to catastrophe risk. Insurers with significant exposure to catastrophe risks generally appear to have relatively strong assessment processes and governance, and manage catastrophe risk distinctly from other forms of insurance risk. Insurers without significant exposure to catastrophe risks have relatively simplified assessment processes and governance. This is reasonable for the circumstances of some insurers but is a weakness for others.

Many insurers' assessments of catastrophe risk are anchored to the solvency standards, for example, in terms of the types of catastrophe risks that they consider. It is important that risk management frameworks are tailored to each insurer's own circumstances and be broad in focus, taking into account reasonably likely events as well as more extreme events. The frameworks should also allow for potential cumulative effects, where catastrophes recur within short periods of time.

Financial markets infrastructure

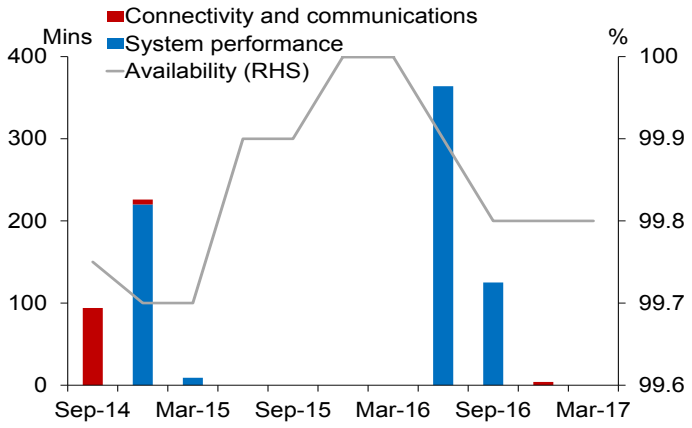
The continuous availability of payment and settlement systems is vital to the smooth and efficient functioning of the financial system and the maintenance of public confidence. In the past six months, no significant outages have occurred in the key payment systems.

ESAS has been operationally stable and is in the process of being upgraded.

The Exchange Settlement Account System (ESAS), operated by the Reserve Bank, settles all financial transactions in New Zealand that involve interbank payments. In the past six months there have been disruptions to normal operations but they were limited to just a few

minutes in November. The disruptions were related to problems with the SWIFT network rather than with ESAS itself. Overall, in the past 12 months the Reserve Bank has been close to achieving its goal that the systems it operates are available for at least 99.9 percent of the time (figure 4.14).

Figure 4.14 ESAS/NZClear availability and outages



Source: RBNZ.

Note: Availability is for the 12 months to the end of the given quarter. ESAS and NZClear availability are reported together because of the close links between the two systems.

The Reserve Bank is currently upgrading its ESAS and NZClear IT systems. This project encompasses a new Real Time Gross Settlement (RTGS) system for ESAS and a new central securities depository (CSD) for NZClear. Work is progressing well but timely implementation will require industry cooperation. The Reserve Bank is working with industry participants to ensure they are aware of developments and understand what will be required of them. In the meantime, the Reserve Bank will continue to ensure that the current RTGS and CSD systems operate effectively and efficiently.

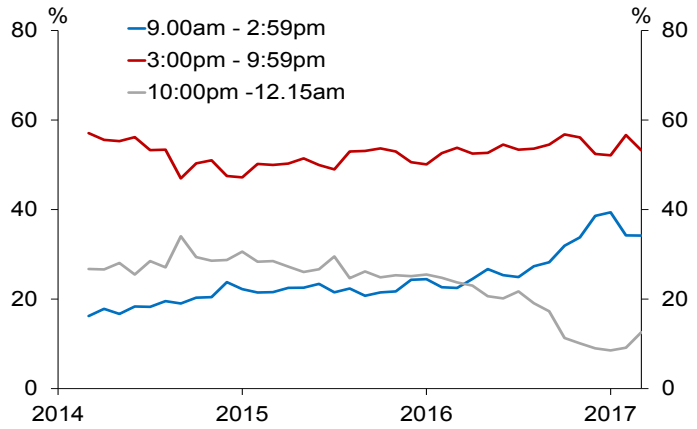
Retail payments are now processed more quickly...

As described in the last *Report*, retail payments are now being processed and settled faster during the day on which the payment instructions are issued. The reduced processing time increases efficiency and reduces settlement risk.

Retail payments between New Zealand bank accounts are processed using the Settlement Before Interchange (SBI) arrangements. Previously there were delays between a payment instruction being issued by a customer and it being processed and settled by banks, often overnight. Under a new protocol, agreed between the Reserve Bank and SBI participants, banks now download customer payment instructions into SBI at least hourly, and submit those instructions for settlement.

The improvement in retail payments processing time is of direct benefit to bank retail customers, as funds are now entering and leaving retail accounts soon after payment instructions are given, e.g. through an ATM or by internet or mobile banking. In addition, the new protocol means that automatic payments can be settled early in the day (figure 4.15) and, since November 2016, banks may no longer dishonour an electronic credit due to insufficient funds.

Figure 4.15
Retail payments
(% of daily value settled in SBI)



Source: RBNZ.

...and work is under way to further enhance the robustness of payment systems.

The Reserve Bank and Payments NZ have been engaging with payment system participants on some key areas to enhance the robustness of payment systems. The last *Report* outlined work to investigate the robustness of EFTPOS payment systems. The work confirmed that these systems are very robust and prolonged outages are unlikely. Nevertheless, participants have agreed to develop contingency measures that could be implemented in the event of an outage. The Reserve Bank welcomes this initiative.

The Reserve Bank and Payments NZ have also implemented improved systems for incident reporting by industry participants. The new reporting systems will give the Reserve Bank and Payments NZ better oversight of operational and processing incidents. This will enable enhanced identification of any systemic weaknesses and help to ensure that all relevant parties are aware of incidents and the responses to them.

Chapter 5
Key regulatory developments

The Reserve Bank has made progress on a wide range of regulatory policies during the past six months. Work on the review of the capital adequacy framework for New Zealand banks is continuing. A high-level issues paper on the capital review was published in May, which details the intended approach and scope of the review. Separately, an 18-month review of the Reserve Bank's outsourcing policy for registered banks was concluded in February. An exposure draft of the revised policy was published for consultation in March, and the revised policy is expected to take effect from the end of Q2 2017. The change to the LVR policy in October 2016 is assessed to have dampened mortgage lending to high-LVR investors and slowed house price growth, while improving the resilience of bank balance sheets.

Progress has been made on a number of other initiatives, including: the International Monetary Fund's assessment of New Zealand's financial system and regulatory regime has been published, a potential debt-to-income tool is under consideration, the bank director attestation regime is under review, and the proposed oversight framework for financial market infrastructures has been approved by Cabinet.

Capital review

The Reserve Bank is conducting a review of the capital adequacy framework and the minimum capital requirements that apply to locally incorporated registered banks. The review will be shaped by international developments and by the Reserve Bank's experience under the current framework.[1]

Internationally, there have been moves to increase and strengthen bank capital ('capital' broadly means equity or equity-like funding that can absorb losses freely without triggering a default). In many countries, regulators are introducing or considering additional capital requirements for systemically important banks and additional limits on simple leverage. Australian authorities have been working to ensure that banks' capital positions are 'unquestionably strong', following the recommendation of a government inquiry.

1 See http://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Policy-development/Banks/Review-capital-adequacy-framework-for-registered-banks/capital-review-issues-paper-may2017.pdf

Even though New Zealand banks are comfortably meeting current capital requirements (see chapter 4), international developments mean their capital positions appear relatively less conservative than they did in the past. The Reserve Bank's initial assessment is that New Zealand banks have capital positions that are around the average of international standards (see figure 4.3). However, there are a number of reasons why a stronger position might be appropriate for New Zealand, including that:

- New Zealand, as a small open economy, is subject to significant shocks;
- New Zealand is relatively reliant on banks to provide consumer and business finance;
- the banking system obtains significant funding from international markets; and
- the domestic banking sector and its asset portfolios are relatively concentrated.

The need for relatively conservative capital requirements in New Zealand is one of the six principles that will guide the capital review:

1. capital must absorb losses ahead of ordinary creditors and depositors;
2. capital requirements should reflect the risks that banks face;
3. where there are multiple methods for calculating capital positions, the outcomes should not vary unduly between methods;
4. capital requirements should be conservative relative to those for international peers;
5. capital requirements should be practical to administer; and
6. capital requirements should be transparent to enable market discipline.

The capital framework requires banks to meet certain capital ratios, calculated as the ratio of eligible capital (the numerator) to a measure of loans and other exposures of the bank (the denominator). The requirements take the form of minimum ratios for eligible capital, supplemented by 'buffer' ratios. The review will assess whether these ratios are set at appropriate levels. The definition of eligible capital in the numerator will also be reviewed, for example, the role of contingent convertible instruments.

The review will also address the calculation of the denominator. Exposures in the denominator are adjusted for risk and banks may use 'standardised' or 'internal models' approaches to do this. The internal models approach allows the risk-adjustment to take account of a richer set of information, but at the cost of complexity and opacity. Consideration will be given as to whether the internal models approach should be restricted to avoid too large a gap between the standardised and internal model approaches.

The overall aim of the review is to ensure a very high level of confidence in the solvency of the banking system while avoiding unnecessary economic inefficiency.

Revised outsourcing policy for registered banks

The Reserve Bank concluded an 18-month review of its outsourcing policy for registered banks in February 2017. The review was necessary to check whether the policy was still fit for purpose, well-aligned with the Open Bank Resolution (OBR) tool introduced in 2013, and due to indications that industry had misinterpreted the requirements and the intent of the original policy. This review included two rounds of public consultation and numerous engagements with stakeholders. The Reserve Bank has published a final policy decision document, a summary of submissions to the consultations and a regulatory impact statement.[2]

While the policy has been decided, the final wording is yet to be finalised. The Reserve Bank released an exposure draft of the revised policy for consultation in March. The revised policy is expected to take effect from the end of Q2 2017.

Policy review

The outsourcing policy, first introduced in 2006, regulates the use of external service providers by 'large banks'.[3] It aims to ensure that a large bank has both legal and practical control over its outsourced functions so it can continue to provide basic banking services (such as payment and transaction services) to existing customers in the event that the bank fails, its overseas parent fails, or an outsourced service is otherwise disrupted. This focus is important in minimising the wider economic impact, and to preserve resolution options such as OBR when managing the failure of a large bank.

Outsourcing can create significant cost savings for banks. Robust outsourcing arrangements can also improve risk management and potentially provide more efficient solutions by allowing access to external expertise that would otherwise not be available. While banks have an interest in managing their own risks when entering into an outsourcing arrangement, they are unlikely to take into account wider spillover effects that may arise when outsourced functions cease to be available in the event that the bank itself or a related party fails. The revised policy does not prevent outsourcing by banks, but seeks to address the potential public costs associated with outsourcing arrangements.

The key requirements of the revised policy are:

- banks must engage with the Reserve Bank before entering into certain outsourcing arrangements with a related party;
- banks must have robust back-ups for functions outsourced to a related party;
- banks must have specific contractual terms included in all outsourcing arrangements;
- banks must maintain records of all outsourcing arrangements; and
- overseas-owned banks must maintain group separation plans.

2 See http://www.rbnz.govt.nz/regulation-and-supervision/banks/consultations-and-policy-initiatives/active-policy-development/review-of-the-outsourcing-policy-for-registered-banks

3 Large banks means locally incorporated registered banks with more than $10 billion in liabilities net of amounts owed to related parties. They currently consist of ANZ Bank New Zealand, ASB Bank, Bank of New Zealand, Westpac New Zealand and Kiwibank.

Some banks will have to make investments to comply with the revised policy, some of which arise due to inconsistent interpretation of the existing policy. Costs of compliance are expected to be significant, but outweighed by the long-term public net benefit of the policy.[4]

To minimise the compliance burden, the Reserve Bank is allowing five years for banks to comply with the policy and allows some flexibility within the policy. The policy does not preclude outsourcing arrangements, provided the outcomes of the revised policy are met. For example, no specific requirements prescribe that services be sourced within a certain jurisdiction.

The revised outsourcing policy provides significant benefits. It reduces costs to society by ensuring that a bank can continue to provide a basic level of services to its existing customers even if it is in resolution. Without that there would be a higher risk of a bank failure causing customers not being able to undertake everyday activities, leading to disruption throughout the wider economy and potential contagion risk. Such costs would increase the risk of a taxpayer-funded bailout.

4 See the regulatory impact statement for more detail on the cost and benefit estimates for the revised outsourcing policy.

LVR restrictions on residential property lending

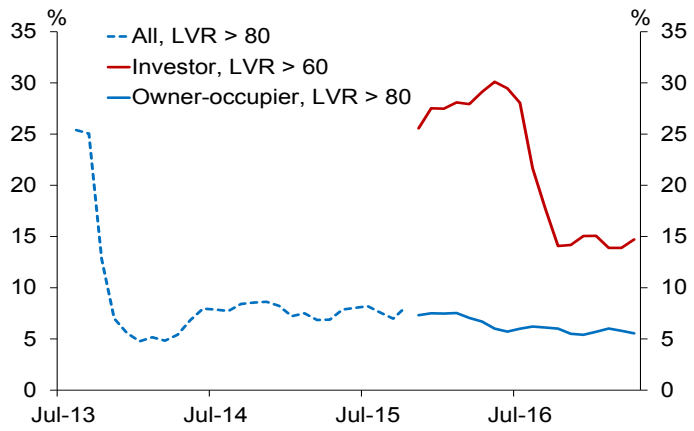
Loan-to-value ratio (LVR) restrictions were first introduced in October 2013 as a temporary measure to enhance the resilience of the financial system to a housing market downturn. In October 2016, the LVR policy was changed in response to housing market imbalances spreading from Auckland to the rest of New Zealand and the increasing prevalence of investors in the market. Restrictions on lending to residential property investors were significantly tightened across New Zealand, while restrictions on lending to owner-occupiers outside Auckland were somewhat tightened. Banks are limited to providing a maximum of (i) 10 percent of owner-occupier lending to borrowers with LVRs above 80 percent and (ii) 5 percent of investor lending to borrowers with LVRs above 60 percent. Currently, all banks are meeting the restrictions.

Since the LVR policy was first introduced, the share of mortgages with LVRs above 80 percent has fallen from 21 percent to 8 percent in March 2017. The 2016 change appears to have further enhanced bank resilience by dampening the growth in lending to high-LVR investors. Since the policy change was announced in July 2016, new lending to investors with an LVR exceeding 60 percent has declined from 28 percent to 15 percent of total mortgage lending (figure 5.1).[5] Lower investor LVRs are expected to directly reduce losses to the banking system during a severe downturn, and dampen the amplification of a downturn associated with property sales by stressed investors.

5 The share of investor lending with an LVR above 60 percent is before exemptions to the LVR restrictions. The most heavily used is the 'combined collateral' exemption, which allows some investors to borrow more than 60 percent of the value of their properties where some of the properties are owner-occupied.

The recent LVR changes are assessed to have improved bank resilience by helping to reduce the share of new lending at high debt-to-income

Figure 5.1 Share of total new commitments at high LVR



Source: RBNZ *New Residential Mortgage Commitments Survey.*

Note: The investor data (red line) include high-LVR investor lending covered by the combined collateral exemption.

(DTI) ratios in the past six months. This has, in part, been achieved by the LVR restriction (i) constraining the size of loan that some investors can obtain and (ii) reducing the share of new lending that is obtained by investors, as investors typically have higher DTI ratios than owner-occupiers. The DTI ratio of new borrowers may also have been reduced by the large slowdown in the Auckland market relative to the rest of New Zealand, as borrowers in Auckland typically have higher DTI ratios. However, as discussed in chapter 3, the overall share of lending at high DTI ratios remains high relative to history and other advanced economies.

While not the primary objective of LVR policy, previous adjustments have had a temporary impact in slowing the housing market. In line with this experience, nationwide house price growth and house sales fell after the recent LVR changes. It is estimated that the latest LVR change has reduced nationwide price growth by more than previous LVR changes. The impact on prices is likely to have been boosted by recent changes in market conditions and a general tightening in bank lending criteria.

Update on other regulatory projects

Update on the 2016 Financial Sector Assessment Programme

The International Monetary Fund (IMF) released the findings and recommendations from its 2016 review of New Zealand's financial system, known as the Financial Sector Assessment Programme (FSAP), in early May.[6] The previous New Zealand FSAP was conducted in 2003.

In its main summary report, the IMF identified the same set of macro-financial risks confronting the financial system that the Reserve Bank has highlighted in past *Reports*. It also concluded that the banking system appears well placed to withstand large but plausible shocks, as judged by a range of stress tests. Nevertheless, the IMF has made a number of recommendations designed to improve the regulatory and supervisory frameworks for the banking sector. There are also a number of recommendations that relate to the Reserve Bank's functions in relation to insurance, financial market infrastructures and crisis management.

The Reserve Bank is considering these recommendations and the extent to which they might support the Reserve Bank's statutory purpose to

6 See http://www.rbnz.govt.nz/regulation-and-supervision/financial-sector-assessment-programme

promote the maintenance of a sound and efficient financial system. A forthcoming *Bulletin* article will explain the 2016 FSAP and its findings and recommendations in more detail.

Debt-to-income limit consultation

The Reserve Bank will soon publish a consultation paper on a potential tool for limiting the proportion of bank mortgage lending at high DTI ratios. The purpose of the consultation is to gather feedback from the public on the prospect of adding a DTI limit to the *Memorandum of Understanding* on macro-prudential policy (the 'MOU') between the Minister of Finance and Governor of the Reserve Bank. The MOU determines the set of macro-prudential tools available to the Reserve Bank and how those tools should be used. Feedback to the consultation will be used by the Reserve Bank and Treasury in discussing the potential amendment of the MOU with the Minister of Finance.

As discussed in chapter 1 and in the previous *Report*, the Reserve Bank believes that DTI limits would be a useful additional macro-prudential tool. A DTI limit could reduce potential risks to financial stability stemming from rising household mortgage debt, should those risks become sufficiently acute. The consultation outlines the potential role for DTI limits alongside the current set of macro-prudential tools in the MOU, and includes a cost-benefit analysis for using DTI limits during a hypothetical period of rising house prices and high and concentrated household debt. The analysis suggests there would be a considerable net benefit from using a DTI limit in such a scenario.

Attestation review

Each quarter, bank directors attest that their bank is meeting its conditions of registration. The Reserve Bank is undertaking a review of the bank directors' attestation regime. The review is intended to assess the effectiveness of banks' arrangements for quarterly disclosure statement attestations and other attestations, e.g. risk systems. The Reserve Bank has appointed a consultancy firm to assist with the review.

The review will be conducted in three parts, including:

- a confidential survey of all directors of locally incorporated banks;
- a desk-based review of selected banks' information related to their attestation processes; and
- interviews of directors, senior management, and external and internal auditors of selected banks.

At the end of the review, the Reserve Bank will provide general feedback to the industry and individualised feedback to the selected banks.

Dashboard approach to quarterly disclosure

In February, the Reserve Bank published a summary of submissions to its consultation from late last year on the 'dashboard' approach to quarterly disclosure for locally incorporated banks.[7,8]

The dashboard aims to enhance market discipline by publishing key information about locally incorporated banks on the Reserve Bank's website in a standardised and easily comparable form. This will support

7 See http://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Policy-development/Banks/Dashboard-approach-to-quarterly-disclosure/Summary%20of%20submissions%20-%20Dashboard%20option%20for%20quarterly%20disclosures.pdf

8 See http://www.rbnz.govt.nz/-/media/ReserveBank/Files/Publications/Policy-development/Banks/Dashboard-approach-to-quarterly-disclosure/Dashboard-consultation-Sept2016.pdf

market efficiency as well as financial stability. The dashboard would replace the requirement for these banks to prepare off-quarter disclosure statements.

All submitters on the consultation supported the dashboard's objective to improve the effectiveness of public disclosures by banks, but some raised issues with certain proposed design elements. After a careful review of the consultation feedback, the Reserve Bank considers that it should be possible to address these concerns. The Reserve Bank will further engage with stakeholders in the coming months to discuss possible refinements to the dashboard concept and ways to address the issues raised during consultation.

Proposed new oversight framework for financial market infrastructures

Financial market infrastructures (FMIs) are an essential part of the financial system, and can be associated with a number of market failures that give rise to systemic risks.

The Government recently decided to adopt an enhanced oversight framework for 'systemically important' FMIs (SIFMIs), and legislation giving effect to this decision is currently being drafted. An exposure draft of the Bill is expected to be released in the second half of 2017.

The framework will provide the Reserve Bank and the Financial Markets Authority (the 'joint regulators') with powers to gather information from any FMI; set prudential requirements for SIFMIs in line with internationally agreed principles; use a range of powers to incentivise compliance; and exercise certain crisis management powers on SIFMIs to ensure critical service continuity during stress or failure.

The framework is designed to achieve financial stability objectives without harming market efficiency and innovation, and to minimise compliance costs (for example, the proposed regime is focused on SIFMIs only). Other aspects of the framework may also support greater market efficiency; for example, the ability to set regulatory requirements around access and governance.

Over-the-counter derivatives

New reforms to the global over-the-counter derivatives market require certain participants to exchange margin on their non-centrally cleared derivative portfolios to protect against current and potential future credit exposures. Although the Reserve Bank does not plan to mandate domestic margin requirements at this stage, the reforms have a wide cross-border reach: Australian-owned New Zealand banks will be directly captured by the Australian regulator's rules, and may also be indirectly captured by the rules that apply to their international counterparts.

Margin requirements are still in the early stages of being introduced across the G20, and are subject to transitional arrangements and staggered phase-in schedules out to 2020. On a conservative estimate, the largest New Zealand banks may be captured by initial margin requirements from as early as September 2017.

The Reserve Bank has engaged with industry and official stakeholders, both locally and abroad, to assess the impact of margin reforms on the soundness and efficiency of the New Zealand financial sector. In coordination with the Ministry of Business, Innovation and Employment, the Reserve Bank is developing a consultation paper on targeted amendments to New Zealand legislation that will support our banks' ongoing compliance with the requirements of their international counterparts.

Recognition of New Zealand regulation of central counterparties

For New Zealand domiciled central counterparties (CCPs) to have European-based participants, European authorities must consider the New Zealand regulation of CCPs to be equivalent to the European Union (EU) regulation of CCPs. During 2016, the Reserve Bank worked with the European Commission on an assessment of regulatory equivalence. The European Commission announced in December 2016 that it considers New Zealand regulation of CCPs that are part of a designated settlement system to be equivalent to EU regulation. Subsequently, the Reserve Bank has entered into a Memorandum of Understanding with the European Securities and Markets Authority (the European regulator of CCPs) to facilitate cooperation in respect of CCP oversight.

Insurance (Prudential Supervision) Act review

The Insurance (Prudential Supervision) Act 2010 (IPSA) was enacted in September 2010. The Reserve Bank considers it timely to review the effectiveness of the legislation in terms of its initial aims, and in light of the risk-based approach to prudential supervision that has been implemented.

In March 2016, the Reserve Bank published an issues paper for its review of the IPSA. The first phase of the review focuses on identifying potential issues for more detailed consideration. The issues paper outlines the rationale, terms of reference, intended process and issues identified by the Reserve Bank. The Reserve Bank is seeking feedback from stakeholders ahead of the review, including on whether we have identified the right issues. The consultation closes on 30 June 2017.

Stress testing

The Reserve Bank views stress testing as a critical component of a sound risk management framework. In addition to requiring banks to conduct their own stress tests and document the implications for their capital planning, the Reserve Bank periodically runs common stress testing exercises with the largest four banks. The purpose of the regulator-led tests is to provide boards, management teams and supervisors with a view on the resilience of individual banks and the wider system to severe but plausible stress scenarios. The Reserve Bank also aims to develop the stress testing capabilities of the wider industry through the exercises, including through detailed feedback meetings on the stress test results.

The most recent regulator-led exercise was a 'reverse' stress test completed in late 2016. This test required the largest four New Zealand banks to determine the most plausible scenario that would lead to a breach of a minimum capital requirement. The results highlight that severe risks would need to materialise before this would occur, beyond the sustained macroeconomic downturn assumed in a typical stress test.[9] A wide range of additional risk factors were explored in the test, including operational risk events, a sustained decline in net interest margins or worse than expected asset quality. The insights from the test informed the recent IMF stress test for the FSAP, and will be an input to the design of future regulator-led stress tests.

9 Previous stress tests involving a severe macroeconomic downturn had shown banks maintaining capital ratios well above minimum requirements. See Box C of the May 2016 *Report* for a summary of the results of the 2015 common scenario ICAAP stress test. See Box A of the November 2014 *Report* for a summary of the 2014 stress test of the New Zealand banking system.

Appendices

Appendix 1

Reserve Bank enforcement actions

The Reserve Bank has responsibility for enforcing the regulatory obligations of sectors, including banking, insurance, payments and settlements, non-bank deposit-taking, anti-money laundering and countering the financing of terrorism. The Reserve Bank monitors entities' compliance with the obligations it oversees. In responding to identified non-compliance by an entity, the Reserve Bank may consider it appropriate to take enforcement action. During the past 12 months, the Reserve Bank has undertaken the following public enforcement actions:

December 2016 – a formal warning was issued to Aotearoa Credit Union ('ACU') under section 80 of the Anti-Money Laundering and Countering Financing of Terrorism Act 2009 ('the Act'), and an enforceable undertaking was accepted from ACU under section 81 of the Act, to review its AML/CFT Programme and amend the identified deficiencies.

December 2016 – a formal warning was issued to TSB Bank Ltd under section 80 of the Act.

Appendix 2

Presentations November 2016 - April 2017

The Reserve Bank presented on financial stability and related topics to the following sectors and regions:

Financial services (9)	Auckland, Tauranga, Wellington
Sectors (2)	Auckland, Hamilton
Advisers (8)	Auckland, Wellington
Business groups (16)	Auckland, Hamilton, Napier, Wellington, Nelson, Christchurch, Timaru, Westport, Greymouth
Universities (1)	Dunedin

Appendix 3

Table 1
Registered banks' market share, credit rating, parent and country of parent

Registered bank's name	Market share[1]	Total assets ($bn)	Credit ratings[3]			Ultimate parent	Country of parent
			S&P	Fitch	Moody's		
Australia and New Zealand Banking Group Limited (B)[2]	1.1	5.5	AA-	AA-	Aa2	Australia and New Zealand Banking Group Limited	Australia
ANZ Bank New Zealand Limited	30.9	157.7	AA-	AA-	Aa3	Australia and New Zealand Banking Group Limited	Australia
Commonwealth Bank of Australia (B)	0.8	4.3	AA-	AA-	Aa2	Commonwealth Bank of Australia	Australia
ASB Bank Limited	17.0	87.0	AA-	AA-	Aa3	Commonwealth Bank of Australia	Australia
Bank of Baroda (New Zealand) Limited	0.0	0.1	-	BBB-	-	Bank of Baroda	India
Bank of China (New Zealand) Limited	0.1	0.5	-	-	A1	Bank of China	China
Bank of India (New Zealand) Limited	0.0	0.1	BB+	-	-	Bank of India	India
Bank of New Zealand	18.4	94.1	AA-	AA-	Aa3	National Australia Bank	Australia
China Construction Bank (New Zealand) Limited	0.2	0.9	A	-	A1	China Construction Bank	China
Citibank N A (B)	0.4	2.1	A+	A+	A1	Citigroup Inc.	USA
Heartland Bank Limited	0.7	3.8	-	BBB	-	Heartland New Zealand Limited	New Zealand
Industrial and Commercial Bank of China (New Zealand) Limited	0.1	0.9	A	-	A1	Industrial and Commercial Bank of China	China
JPMorgan Chase Bank NA (B)	0.2	0.8	A+	AA-	Aa3	JPMorgan Chase & Co	USA
Kiwibank Limited	3.9	20.0	A	AA	A1	Kiwi Group Holdings Limited	New Zealand
Kookmin Bank (B)	0.1	0.4	A	-	A1	Kookmin Bank	South Korea

(continued)

Registered bank's name	Market share[1]	Total assets ($bn)	Credit ratings[3]			Ultimate parent	Country of parent
			S&P	Fitch	Moody's		
Coöperatieve Rabobank U.A. (B)	0.6	3.0	A+	AA-	Aa2	Coöperatieve Rabobank U.A.	Netherlands
Rabobank New Zealand Limited	2.2	11.3	A	-	-	Coöperatieve Rabobank U.A.	Netherlands
Southland Building Society	0.7	3.7	-	BBB	-	Southland Building Society	New Zealand
The Bank of Tokyo-Mitsubishi UFJ Limited(B)	0.7	3.5	A+	A	A1	Mitsubishi UFJ Financial Group Inc.	Japan
The Co-operative Bank Limited	0.4	2.3	-	BBB	-	The Co-operative Bank Limited	New Zealand
The Hongkong and Shanghai Banking Corporation Limited (B)	1.0	5.1	AA-	AA-	Aa2	HSBC Holdings PLC	UK
TSB Bank Limited	1.3	6.6	-	A-	-	TSB Community Trust	New Zealand
Westpac Banking Corporation (B)	1.2	6.2	AA-	AA-	Aa2	Westpac Banking Corporation	Australia
Westpac New Zealand Limited	17.7	90.4	AA-	AA-	Aa3	Westpac Banking Corporation	Australia

1 Each registered bank's assets as a proportion of the total assets of the banking system, as at 31 December 2016. Weights do not sum to 100 due to rounding.

2 Banks marked (B) operate in New Zealand as branches of overseas incorporated banks. All other banks are incorporated in New Zealand.

3 Credit ratings are as at 24 May 2017.

Source: Registered banks' *Disclosure Statements*.

Table 2
New Zealand financial system assets and liabilities (*as at 31 December*)

Financial system liabilities $bn	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Banks										
Households	79	90	92	97	106	115	125	137	152	163
Other residents	98	114	103	104	108	120	125	131	141	149
Non-residents	111	127	132	127	122	112	108	108	114	127
Other liabilities and equity	43	72	53	53	60	59	55	61	73	72
Total	**332**	**403**	**380**	**382**	**395**	**407**	**414**	**435**	**479**	**511**
Other non-bank lending institutions										
Households	12	9	9	7	5	3	3	3	3	3
Other residents	8	7	6	7	7	6	5	6	6	6
Other liabilities and equity	12	11	9	7	5	5	5	5	5	5
Total	**31**	**27**	**24**	**21**	**17**	**14**	**14**	**14**	**15**	**15**
Funds under management										
Household assets	63	55	61	64	66	75	84	95	107	114
Other sector assets	11	8	10	10	10	10	11	13	13	19
Total	**74**	**63**	**70**	**74**	**76**	**84**	**95**	**108**	**120**	**132**
Total financial system liabilities	**437**	**493**	**474**	**477**	**488**	**505**	**523**	**557**	**615**	**657**

Financial system assets $bn	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Banks										
Households	153	163	169	173	177	185	196	205	221	241
Other residents	127	149	136	137	141	149	151	156	168	174
General government	4	6	14	17	20	20	18	17	16	17
Non-residents	15	16	16	13	10	12	14	19	27	27
Other assets	33	70	44	41	47	41	35	38	48	52
Total	**332**	**403**	**380**	**382**	**395**	**407**	**414**	**435**	**479**	**511**
Other non-bank lending institutions										
Households	14	12	10	9	7	6	6	6	6	6
Other residents	13	12	11	9	7	6	6	6	7	6
Other assets	4	4	3	3	3	2	2	2	2	2
Total	**31**	**27**	**24**	**21**	**17**	**14**	**14**	**14**	**15**	**15**
Funds under management										
Domestic assets	42	38	40	41	43	48	52	55	62	67
Overseas assets	31	25	30	33	32	36	44	52	59	65
Total	**74**	**63**	**70**	**74**	**76**	**84**	**95**	**108**	**120**	**132**
Total financial system assets	**437**	**493**	**474**	**477**	**488**	**505**	**523**	**557**	**615**	**657**

Source: RBNZ *Household Assets and Liabilities Survey*, RBNZ *Managed Funds Survey*, RBNZ *Standard Statistical Return*.

Notes: General insurance companies not included. Totals and sub-totals may not sum to 100 due to rounding.